DECEMBER 29, 1958

STEEL
The Metalworking Weekly

A PENTON PUBLICATION

ASM Dome Goes Up in Ohio

• Steeplejacks gingerly scale 6 in. aluminum tubing as they erect a "tomorrow-is-today" weblike structure, the world's largest openwork geodesic dome. The 103 ft "space lattice" serves as an elaborate landmark for the new American Society for Metals' headquarters near Cleveland . . . Page 39

Page 27 . . .

Machine Tool Men See Modest Rise In Next Two Years; More Later

Page 32 . . .

Where World Steel Is Expanding

Page 60 . . .

Electrical Firsts Get Tryout on Aluminum Potlines, Rolling Mills

Page 62 . . .

Standards Rout Duplication

Page 68 . . .

Welded Rings Have Built-in Quality

Page 76 . . .

How Finished Steel Will Gain in '59

Metalworking Outlook —Page 19

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To Pa Pitt, we are youngsters, but in the Steel Industry we are one of the older members of the family. For 56 years, we have been making Pipe & Tube Mills, Sheet and Strip Equipment, Continuous Processing Lines, Drawbenches, Rolls, and Other Products for Steel . . . as well as the Copper, Brass, Aluminum, Rubber, and Chemical Industries. We salute Pa Pitt's 200th Birthday and plan to be around for another salute on his next Centennial.

the

Aetna-Standard

engineering

company

Pittsburgh Bicentennial

1758- 1958- 59

General Offices:
Pittsburgh, Pa.

Plants:
Ellwood City, Pa.
Warren, Ohio

Research Laboratory:
Akron, Ohio

Wire for 10,000 uses

...and we make all kinds

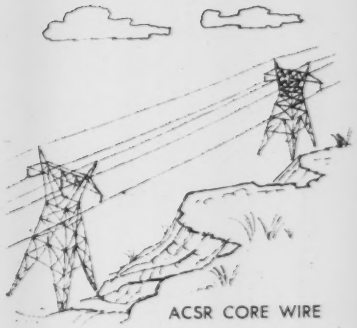
Name your wire requirements—chances are that our wire mills at Johnstown, Pa., and Sparrows Point, Md., are right now producing the very grade you need.

Whether it's low- or high-carbon wire, bright basic or annealed, galvanized or bethanized . . . we pay the closest attention to all the important details that mean top-quality steel wire.

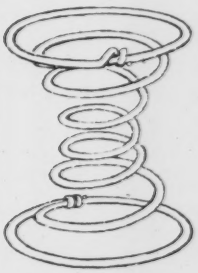
Working closely with users of steel wire, we have developed various specialties for specific end uses. Our engineers will gladly discuss steel wire with you, whether you need an ordinary grade or something special. Just get in touch with the district sales Bethlehem office nearest you, or write to us direct.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

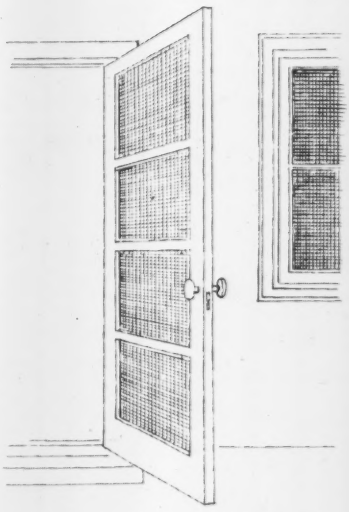
On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
Export Distributor:
Bethlehem Steel Export Corporation



ACSR CORE WIRE

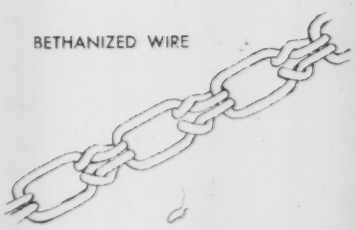


SILVER STAR SPRING WIRE

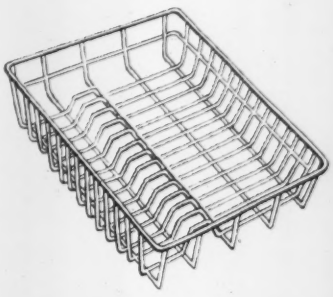


LIQUOR FINISH FLY SCREEN WIRE

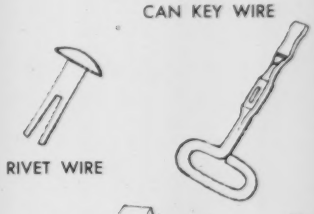
BETHANIZED WIRE



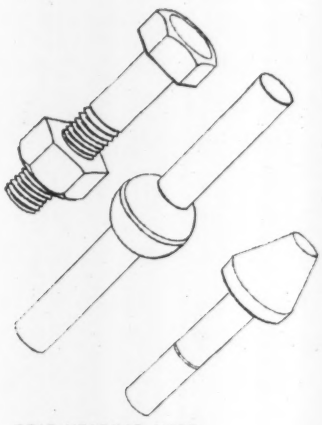
CAN KEY WIRE



BRIGHT BASIC WIRE

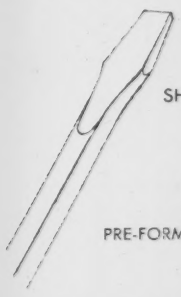


RIVET WIRE



COLD-HEADING WIRE

COAT HANGER WIRE



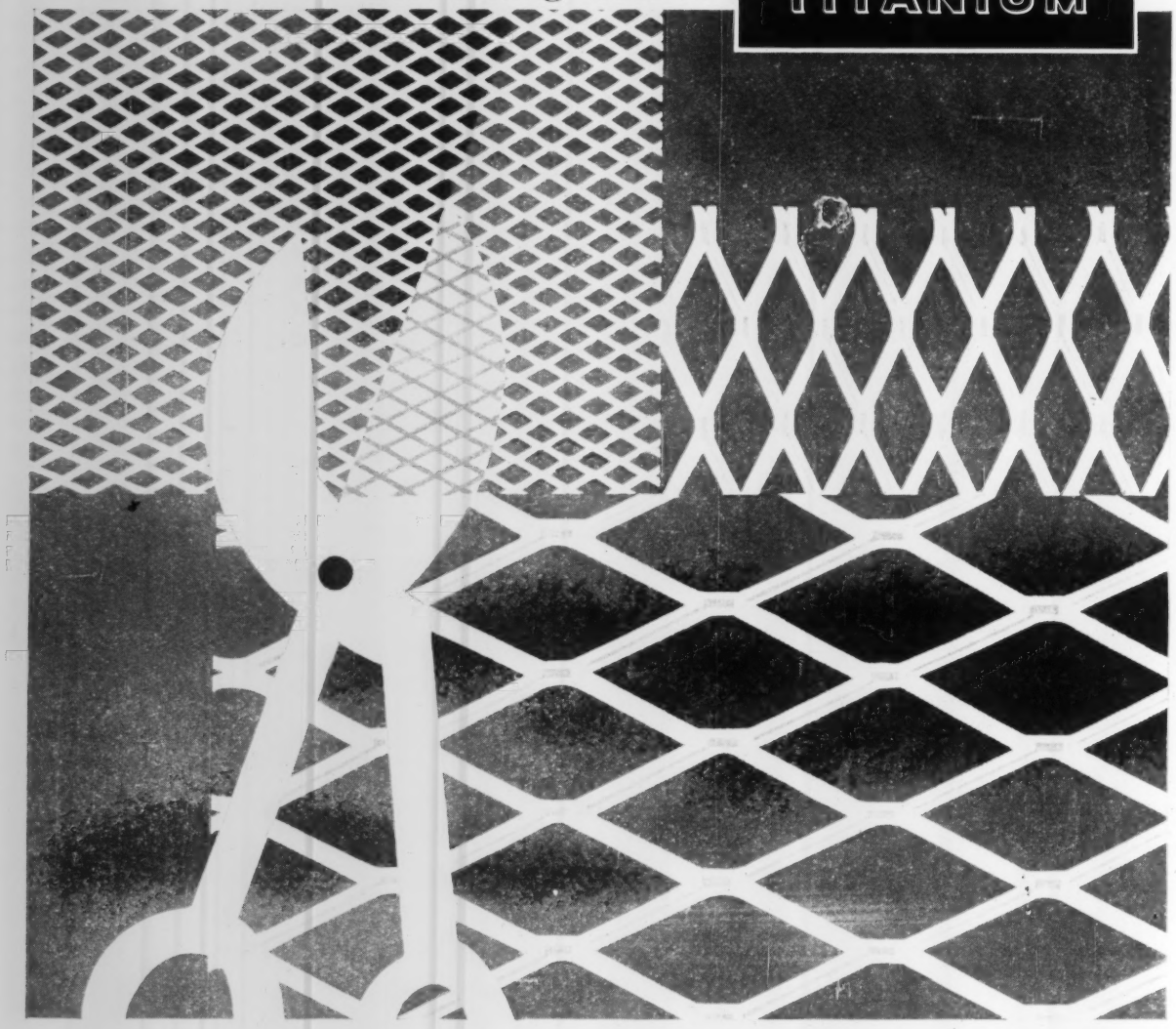
SHAPED WIRE

PRE-FORMED STAPLE WIRE

BETHLEHEM STEEL

BETHLEHEM STEEL

Cost cutting ideas in **TITANIUM**



EXPANDED TITANIUM SHEET

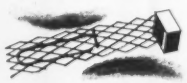
"opens up" new savings in corrosive plating applications

Now, cost-saving applications for titanium take another important step forward. Expanded titanium sheet, recently introduced by Mallory-Sharon, offers interesting possibilities for use in the plating and chemical processing industries.

Dip baskets

Filters

Its high corrosion resistance makes it ideal for use in acid plating, acid dipping baskets, and in protection shields for immersion heating electrodes. The new material is available in gauges from .015" to .125", from 1/8" to 1½" diamonds, and in standard 48" x 96" sheets.

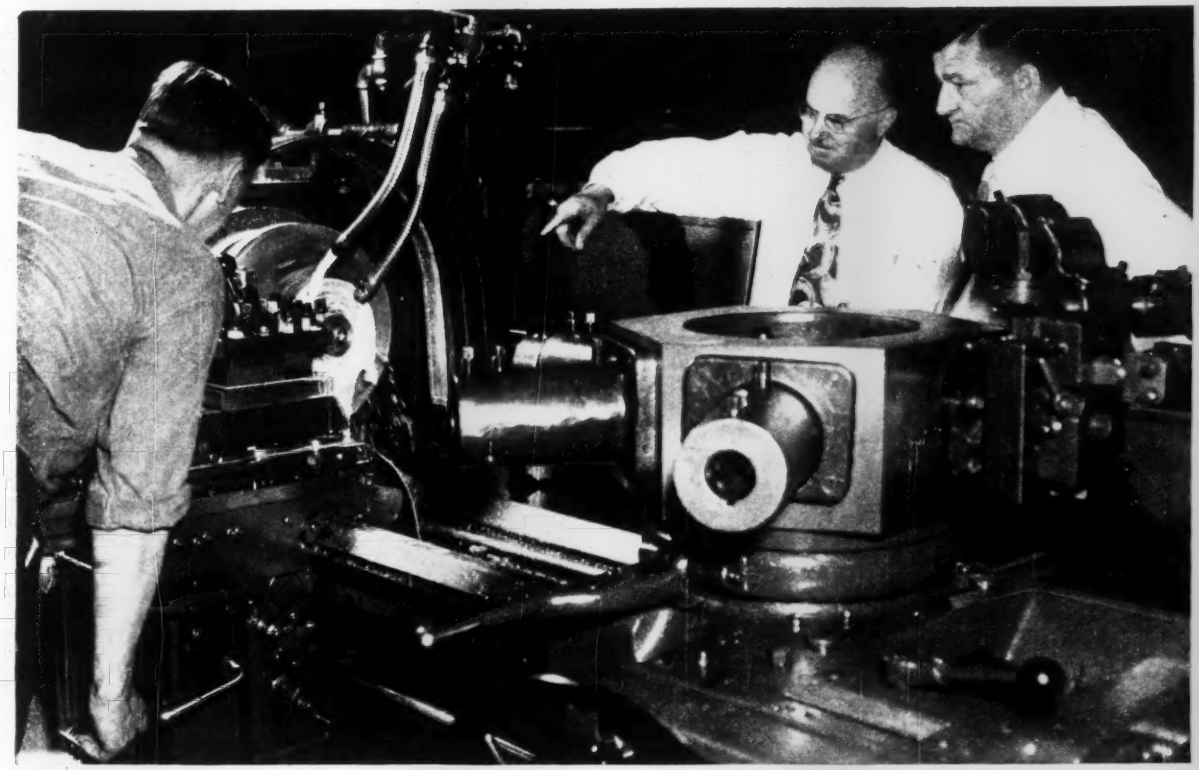


Protective shields

Expanded titanium sheet is now available in production quantities. Prices vary with gauge and strand widths. For further information, write for Technical Data Sheet.

MALLORY SHARON

MALLORY-SHARON METALS CORPORATION · NILES, OHIO



Built right – Sold right

WARNER & SWASEY MACHINE TOOLS have established enviable records for high productivity, low maintenance and minimum downtime. They've *proved* their dependability – holding their accuracy for years after they have paid for themselves. They're *built right!*

Warner & Swasey's principle of design plays an important role in this success. Each model is *individually designed*—from the floor up—to handle a *specific range of work.* Machine handling time is thus minimized.

Skilled craftsmen, working to exacting Warner & Swasey standards, combine the most modern machines and processes with certain time-honored skills—so necessary to insure the traditional Warner & Swasey accuracy.

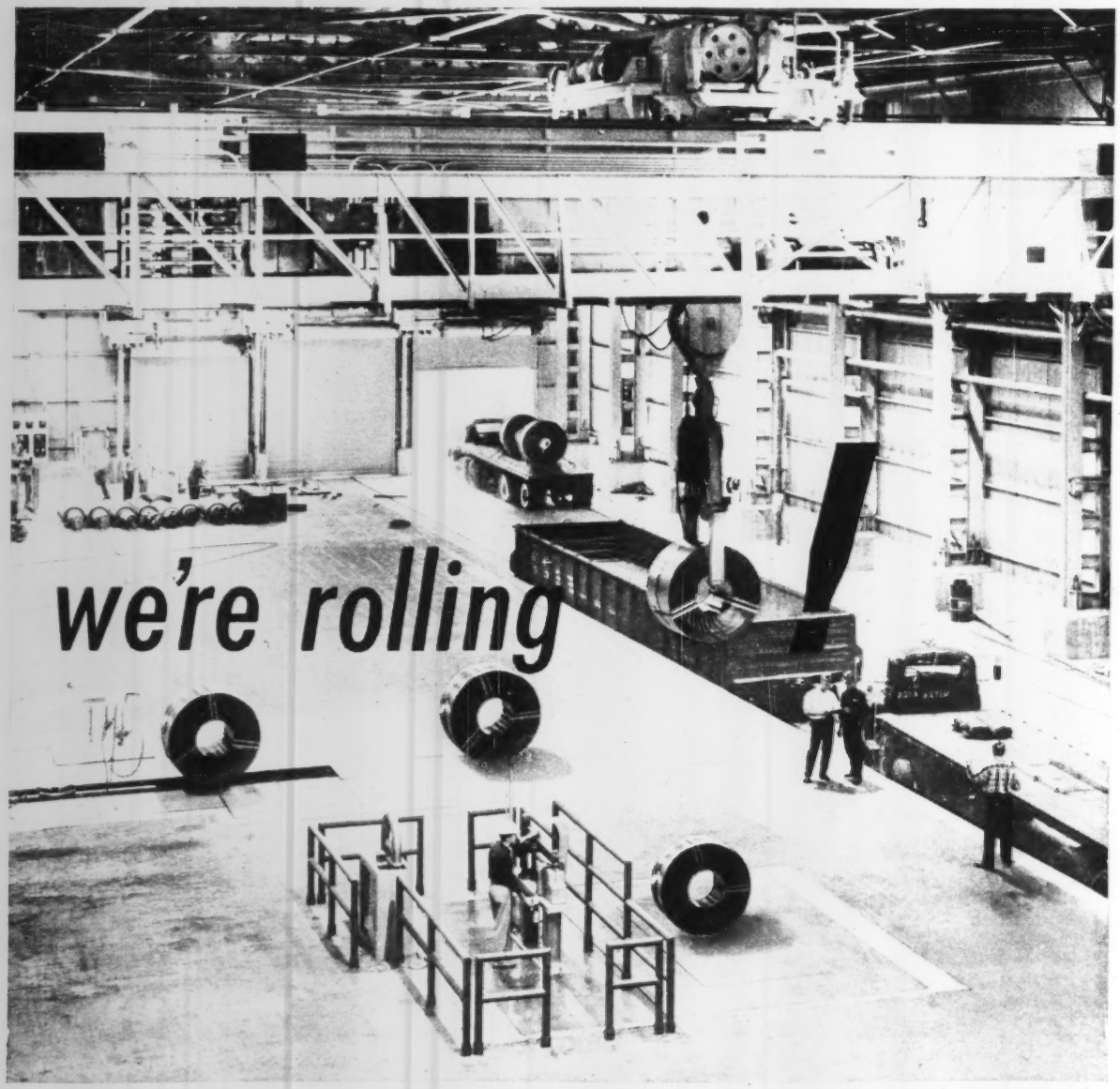
And Warner & Swaseys are *sold right!* By turning specialists who follow a rigid Warner & Swasey policy—that they recommend and sell a machine *only* when it completely fulfills the requirements of your particular work.

These turning specialists are also at your service long *after* the order is written. Your nearest resident Field Representative, one of 62 located throughout the country, is quickly available to you. He's ready to lend his training and experience to help you *maintain* the high productivity of the Warner & Swaseys in your plant.

So whatever your turning needs . . . whether it's a machine for a specific job, or if you're looking for greater production through modernization—call in your nearest Warner & Swasey Field Representative.

WARNER & SWASEY
Cleveland
PRECISION MACHINERY SINCE 1880

YOU CAN PRODUCE IT BETTER, FASTER, FOR LESS...WITH A WARNER & SWASEY



NOW...AT INLAND...500,000 ADDITIONAL TONS CAPACITY FOR COLD ROLLED SHEET PRODUCTS . . . a half-million more tons of the same uniformly dependable steel that has made *Inland Quality* the recognized standard among manufacturers throughout the great Midwest. Inland's giant, new 4-stand tandem mill, most powerful of its size in the industry, is part of Inland's program of expansion, keeping pace with the growth of Midwest manufacture. New pickling, continuous normalizing, annealing and tempering facilities do their part in producing this quality steel for your use. This new capacity means better service for you from Inland.

INLAND

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This Week in STEEL The Metalworking Weekly

December 29, 1958
Vol. 143 No. 26

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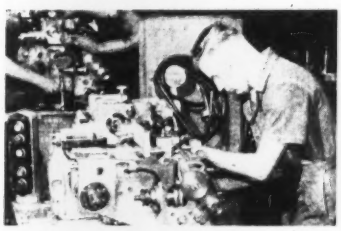
Take it from the industrial supply industry, business is better, but the hard sell is back!

SPECIAL FEATURE 27



What are prospects for machine tool builders in 1959? Here's the consensus of 78 builders who reported their opinions to STEEL: New orders next year will reach $455 million. In 1960, they'll climb to $580 million.

WINDOWS OF WASHINGTON 36

You would have to notify Commerce Department of price hike six months in advance under O'Mahoney proposal.

MIRRORS OF MOTORDOM 45

Ford's George Walker tells about dream car, sketches of which will go to runners-up in STEEL contest.

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Business prognosticators are in greater agreement this year than most. They see steady advancement, but no boom.

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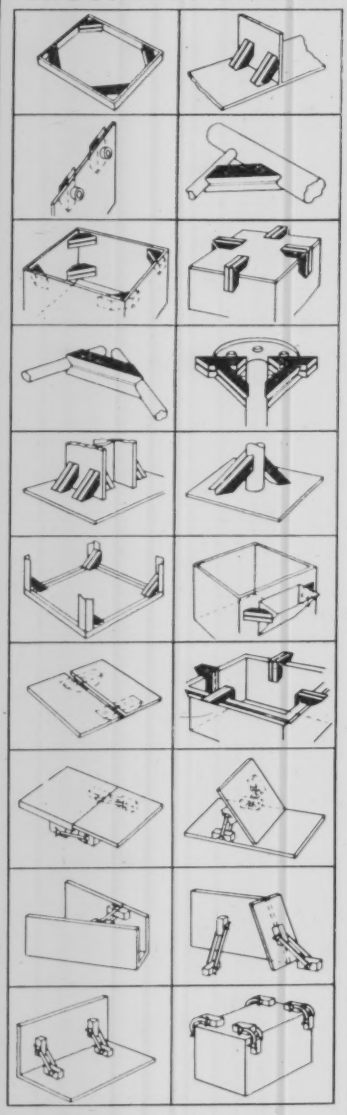
STEEL, the metalworking weekly, is selectively distributed without charge to qualified management personnel with administrative, production, engineering, or purchasing functions in U. S. metalworking plants employing 20 or more. Those unable to qualify, or those wishing home delivered copies may purchase copies at these rates: U. S. and possessions and Canada, $10 a year; all other countries, $20 a year; single copies, 50 cents. Metalworking Yearbook issue, $2. Published every Monday and copyright 1958 by The Penton Publishing Co., Penton Bldg., Cleveland 13, Ohio. Accepted as controlled circulation publication at Cleveland, Ohio.

Index available semiannually. STEEL is also indexed by Engineering Index, 29 W. 39th St., New York 18, N. Y.

Aronson TWINNER
MAGNETIC CLAMPS
WELDING AIDS WITH
THOUSANDS OF USES



UNIVERSAL BALANCE® POSITIONERS
BENCH TURNTABLE POSITIONERS
GEAR DRIVEN POSITIONERS
HEADSTOCK - TAILSTOCK POSITIONERS
TRACTRED® TURNING ROLLS
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FULLY AUTOMATIC POSITIONERS

ARONSON
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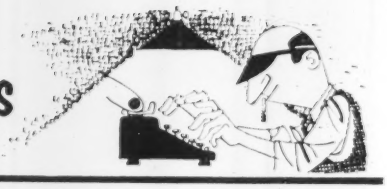
behind the scenes



Here's to You

An old saw goes to the effect that if angels sang in a wilderness, the ineffable music would be wasted entirely if no human ears were there to drink it in. Something similar might be said about business papers in general, and STEEL in particular: Of what use is the material they publish, if they have no readers? The answer to this academic question is so obvious we can see the entire editorial and business staff of STEEL coming smartly to attention and saluting YOU, the reader.

Yes, as far as STEEL is concerned, you are a pretty important person. Surveys have indicated that you are 48 years old; your annual income is $19,841; you like fishing and golf; you supervise 29 subordinates; and you have held your present job 8.6 years. Now, those things are significant to the census people, but just between us chickens, it's a lot of cracked corn; isn't it? Why, the STEEL reader is much too important an individual to pigeonhole. You are all ages, from 21 to 80; you drive Model A Fords, reconditioned Maxwells, new Buicks, and custom Cadillacs; you play cards, drink whisky, use tobacco; you never bother with cards, likker, or smokes; you read Mickey Spillane and Aldous Huxley; you eat everything that can be eaten; you watch your diet—and so on.

And a Toast

The foregoing thoughts were generated by the fact that this is the last issue of 1958, and that this would be an opportune time to thank STEEL's faithful readers for their continued attention. An index of the material published in this magazine over the past year represents a veritable compendium of useful information—and when we say compendium, we ain't just fishin' for clumsy cliches, Mac: Compendium actually means the inclusion of a large subject within small compass. In the space of 52 issues, STEEL has reported an entire year of progress in Metalworking.

We have records of some of the readers who gladly received STEEL's Program for Management articles, stories on technical developments, forthright editorials on controversial subjects, features on news and metal markets. A business paper's primary function is to inform and instruct its readers in matters that interest them. Reader response suggests that STEEL has succeeded in its mission, and because this, as we mentioned previously, is the last issue of 1958, we would like to toast readers and magazine alike:

Here's to the book that's known
as STEEL,
None other shall exceed it,
Because it's tailored to the wants
Of folks like YOU who read it!

Last Like First

This issue maintains the pace established by the first regular issue (after the Yearbook) of Jan. 13, 1958. Do you remember the high spots of that January issue? It carried a story about the comeback of copper and described how the production of that metal was keeping pace with the growth of the electrical industry. On Page 46 there was a story about Russia's progress in the development of atomic power for peaceful application. On Page 70 an article calling attention to the use of ferrous castings opened with: "You can reduce production costs substantially, gain design versatility, and boost the mechanical properties of your products through the wise selection of ferrous castings."

Just as the first regular issue of 1958 was designed to be helpful, so is this, the last. On Page 30 you will find some news about worldwide steel expansion. Here we go again with that confounded compendium, but that is precisely what it is: A compendium of current information on what is going on in steel around the world. The article, or report, represents a major job.

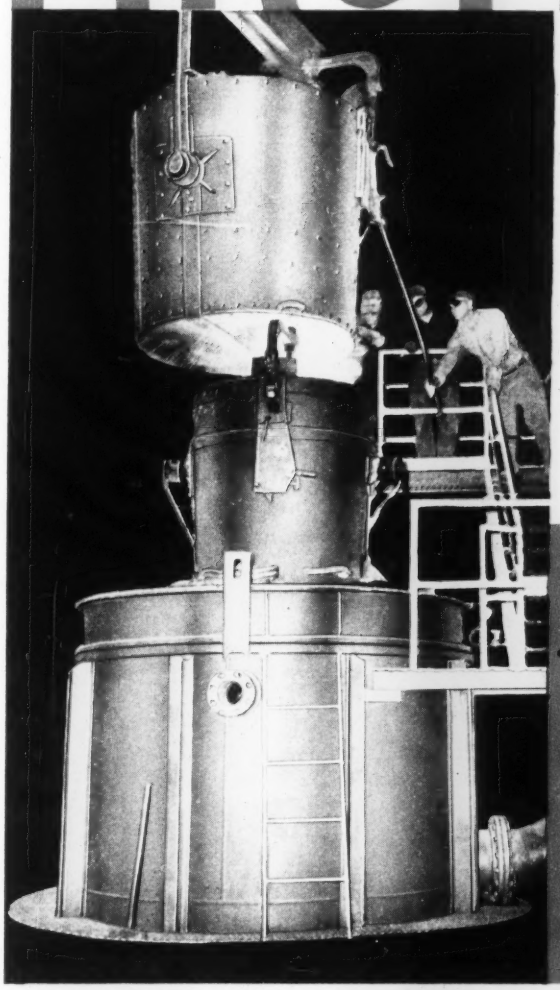
Want to catch up on the missile situation and how it may affect your business? On Page 29 the editors have prepared a dossier on the missile status. Whether we like it or not, missiles are here to stay (unless they are shot permanently into space), and many manufacturers, contractors and subcontractors are obliged to revise their thinking.

Machine Tool Editor Robert Huber heads up a report on machine tool prospects for the next two years. It begins on Page 27 and may possibly reveal things to you that you didn't wot of before. Don't sell that "wot of" business short; it is the archaic version of "I dig you, Jack," but it has the virtue of being shorter and more dignified. Perhaps in times to come, assuming that everything goes in circles and that history repeats, the cats of tomorrow will revert to ancient jargon, and pray that God will rest you merry, ladies and gentlemen—and at this point everybody on STEEL, in language as old as it is new, expresses the hope that you will have a Happy and Prosperous New Year.

Shirdley

(Metalworking Outlook—Page 19)

FIRST with VACUUM DEGASSING in die casting die steels THERMOLD AV



For your most exacting die casting jobs, Thermold AV gives you the assurance of highest quality by the use of the ultimate in melting technique—vacuum degassing.

Now large size ingots are vacuum degassed in standard production processing—the first tool steel degassing installation in the United States.

This new advantage is in addition to quality controls that have set the standard for the industry—small batch furnace melting, close control of press forging and annealing, and 100% Reflectoscope testing.

With this contribution to the high quality of Thermold AV, Universal-Cyclops gives further assurance of homogeneity of structure, freedom from gaseous impurities, high polishing quality and the utmost resistance to thermal and mechanical fatigue.

Write for new bulletin.

A heat of Thermold AV being processed in the vacuum degassing installation.

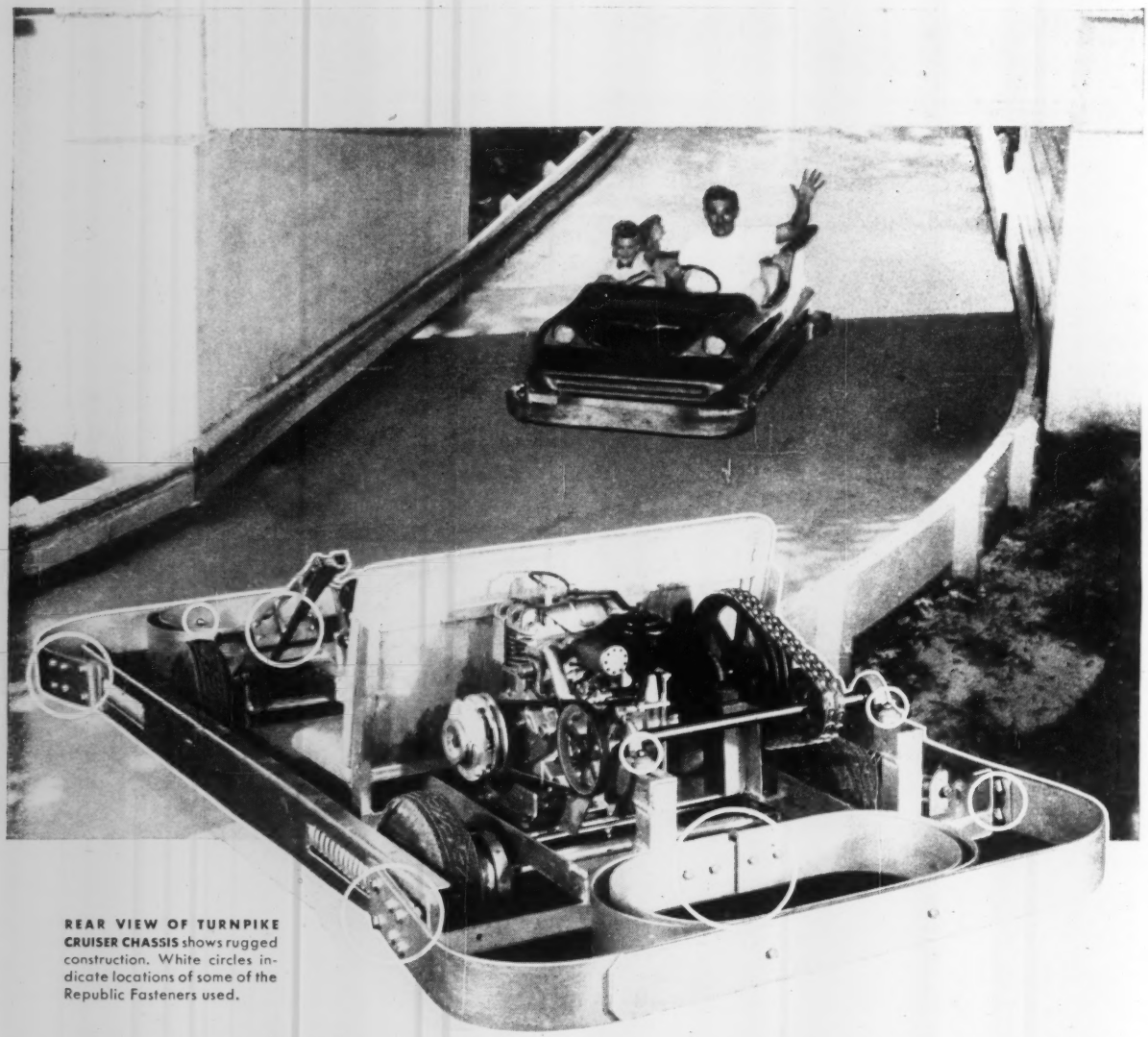
A block of Thermold AV measuring 18" x 36" x 48". One of the largest forged blocks of high alloy die casting die steel ever produced—typical of sizes available vacuum degassed.

UNIVERSAL CYCLOPS
STEEL CORPORATION
BRIDGEVILLE, PA.

TOOL STEELS • STAINLESS STEELS • HIGH TEMPERATURE METALS

FOR YOUR NEXT CRITICAL DIE CASTING JOB, GET IN TOUCH WITH YOUR NEAREST UNIVERSAL-CYCLOPS SALES OFFICE OR WAREHOUSE.

Buffalo	Dayton	Indianapolis	New York	Rock Island	Titusville
Chicago	Detroit	Los Angeles	Philadelphia	St. Louis	Washington, D.C.
Cleveland	Hartford	Milwaukee	Pittsburgh	Syracuse	Worcester



REAR VIEW OF TURNPIKE CRUISER CHASSIS shows rugged construction. White circles indicate locations of some of the Republic Fasteners used.

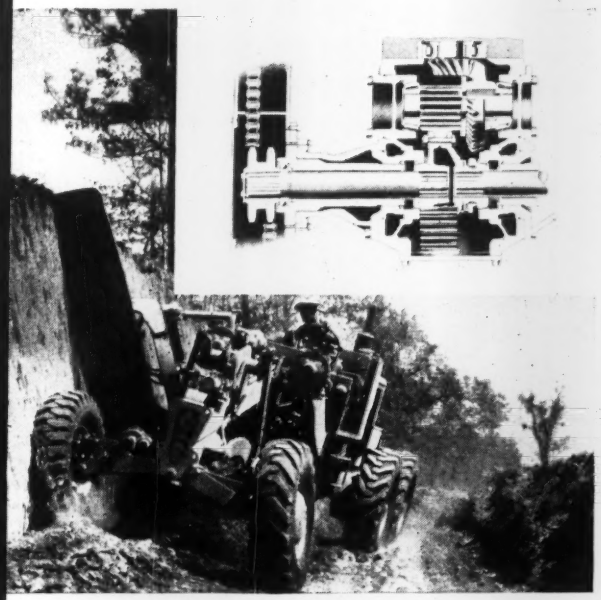
Republic Fasteners Underwrite Safety...Minimize Maintenance

IN STRECO TURNPIKE CRUISERS

Amusement park operators insist on safe, efficient equipment, designed for rugged service with a minimum of maintenance. That's why Streifthau Manufacturing Company, Middletown, Ohio, builders of amusement devices for more than 35 years, leave no detail to chance in producing equipment to meet maximum safety and minimum maintenance demands. These are the reasons why Republic Bolts, Nuts, and Cap Screws are used to fasten critical assemblies in the new Streco Turnpike Cruisers. Full-formed heads and clean, accurate threads make assembly and disassembly easy. And, when fully torqued, danger of fatigue failure is virtually eliminated.

In the production of fastener products, Republic processing goes far beyond simply meeting industry standards. Republic provides top quality through closely controlled, integrated production from mining and blending of ores to final inspection of finished fasteners. Exhaustive mechanical and metallurgical tests are your assurance of extra value in Republic Fasteners. Yet they cost no more than ordinary brands.

For complete information on the 20,000 standard and 8,000 special types and sizes of Republic Fasteners available, contact your nearest Republic representative or distributor. Or mail coupon.



TOUGH, STRONG REPUBLIC ALLOY STEEL is used in this motor grader, built by Adams Division, LeTourneau Westinghouse Company, to withstand fatigue, torque, and high impact loads. The grader's full-floating, two-section drive axle is made of Republic Hot Rolled 4340 Alloy Steel, heat treated. Day-in, day-out punishment under all operating conditions causes no permanent set. For data on Republic's complete line of alloy steels, mail coupon today.

REPUBLIC CHATEAUGAY PIG IRON adds strength, wear-resistance, excellent machinability to ductile iron cast parts in the Fitchburg Chipper. This machine, made by Fitchburg Engineering Corporation, Fitchburg, Mass., provides on-the-spot disposal of wood wastes. Chateaugay is the ideal base metal for ductile iron castings because of its high total carbon content and unusually low phosphorus, silicon, and manganese content. Uniform distribution of chemical elements in Chateaugay assists in producing a dense grain structure which results in excellent wear-resistance and economical machining. Republic Pig Iron Metallurgists will give you all the facts on Chateaugay. Mail the coupon today.

REPUBLIC MATERIALS HANDLING SPECIALISTS engineered these steel boxes to the exact requirements of the Kropp Forge Company, Chicago, Illinois. Special features include corrugated construction for extra strength, a smooth channel around the top to eliminate dangerous sharp edges, four-way fork channels to simplify handling, and stacking brackets welded to top corners to permit tiering to any practical height. As a result, these boxes save time, space, and money in handling and shipping operations. New materials handling ideas from Republic may help you gain similar advantages. Send coupon for facts.

REPUBLIC STEEL

World's Widest Range of Standard Steels and Steel Products

REPUBLIC STEEL CORPORATION
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Please send more information on:

☐ Fastener Products ☐ Chateaugay Pig Iron
☐ Alloy Steel ☐ Materials Handling Equipment

Name_____ Title_____

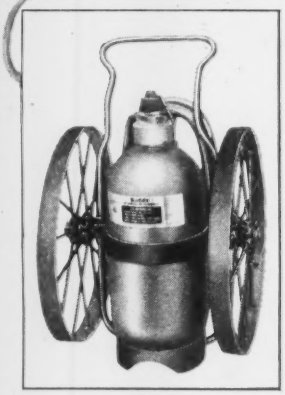
Company_____

Address_____

City_____ Zone____ State_____

NEW! FOR FIGHTING LIQUID FIRES!

ONE-MAN DRY CHEMICAL KILLS MORE FIRE FASTER!



This new Kidde 200-pound pressurized unit has an *extra* 50 pounds of fire-smothering dry chemical, is designed for faster, easier operation. Its 40-foot stream gives more efficient extinguishing action, greater heat protection for the operator! No valves to unscrew, no wait for pressure, no pressure reducer to cause you trouble. Just remove safety pin, flip valve toggle, turn on nozzle lever. No conventional seal. Its exclusive Bridgeman seal holds pressure by using 450 psi to exert a *three-ton* sealing force.

COMPLETELY NEW DRY CHEMICAL LINE GIVES FASTER, EASIER OPERATION!

On the left, the new Kidde 20-pound dry chemical portable — completely new, completely better. The simplest, most efficient dry chemical portable on the market. Features include oversize aluminum handle for gloved-hand operation, perfect balance for faster action, simple one-two operation. Remove horn, pull trigger, and fire's out. Rugged, dustproof pressure gauge is recessed for protection. 10, 20- and 30-pound Kidde portables pressurized at 225-250 psi. Coming soon — new 2½- and 5-lb. models charged at 140-160 psi. Write today for information about this new Kidde line!

Kidde

Walter Kidde & Company, Inc.
1260 Main St., Belleville 9, N.J.
Walter Kidde & Company of Canada Ltd.
Montreal — Toronto — Vancouver

LETTERS TO THE EDITORS

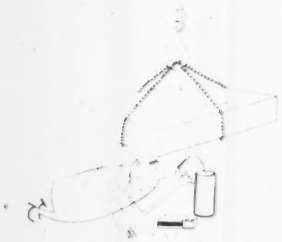
STEEL Aims To Please

We like the idea of your new cover (Dec. 8), particularly the listing of some of the contents. Of course, we know it is hard to please everyone but we would prefer to have the page numbers for the various articles on the lefthand side of the items so our routing label would not cover up the information conveyed.

A. W. Lancaster
Dorr-Oliver-Long Ltd.
Orillia, Ont.

• *We like your suggestion. Subsequent issues list page numbers on the left side.*

Seeks Explosive Forming Help



I am most interested in "Explosive Forming Tackles Big Tube" (Dec. 8, p. 128).

Your help would be appreciated in obtaining more information on explosive forming of small sheet metal parts for the automotive industry.

C. D. Holder
Tool Engineer-Stampings
Guide Lamp Div.
General Motors Corp.
Anderson, Ind.

• *Each explosive forming job is a special project. If you will contact some of the companies listed in "Explosives Form Space Age Shapes" (Aug. 25, p. 82), they will be able to help you.*

Useful, Practical Explanation

We would like an extra copy of "Break-even Point: Route to Better Decision Making" (Dec. 1, p. 40).

This was a most useful and practical explanation, and we feel this will be of great use to us in this department.

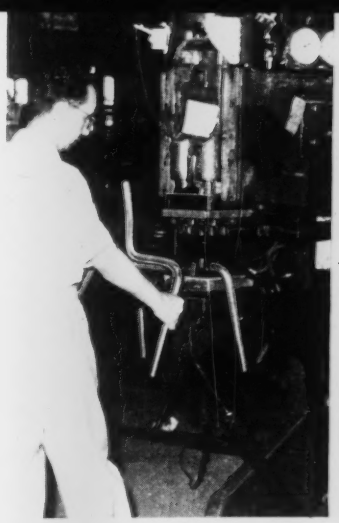
R. G. Wilson
Vice President
Marketing & Advertising
Gast Mfg. Corp.
Benton Harbor, Mich.

Corrects Tolerances

Please send 10 reprints of "Special Machine Jacks Up Quantity and Quality" (Nov. 24, p. 104).

We would like to call attention to sev-

(Please turn to Page 12)



At Kuehne Manufacturing Co.,

workman is induction welding a table arm support for school furniture. Tubing was previously rolled from Youngstown Cold-Rolled Sheets.

Accent on Excellence

Youngstown cold-rolled sheets

Kuehne Furniture

for SMART MODERN DINING

You'd find dining delightful in surroundings featuring a functionally fashionable Elsinor Group by Kuehne Manufacturing Company of Mattoon, Illinois.

The smartly-styled tubings accenting the design lines of tables, chairs and companion pieces are formed from Youngstown Cold-Rolled Strip, electrically welded and shaped in Kuehne's own plant. Antique bronze plate or warm satin finishes add a final note of elegance to these steel components.

Wherever steel becomes a part of things *you* make, the high standards of Youngstown *quality*, the personal touch in Youngstown *service* will help you create products with an "accent on excellence"

QUALITY YOUNGSTOWN SERVICE

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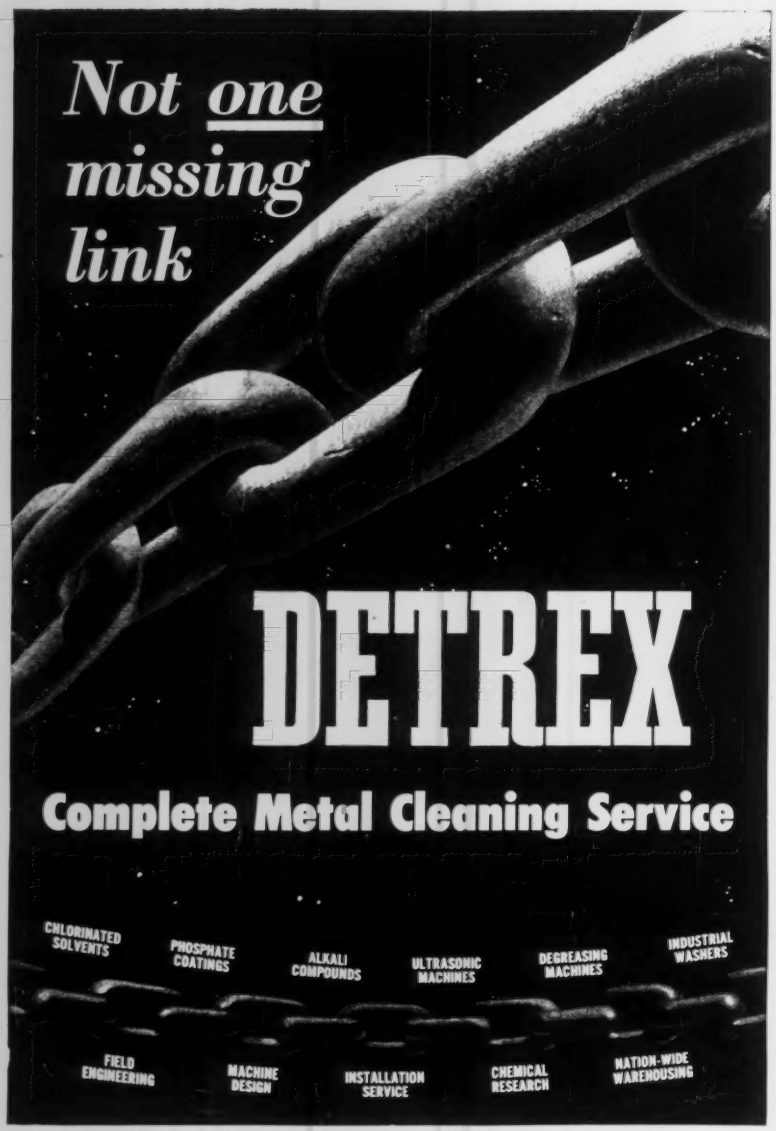

DETREX services and facilities forge a chain without one missing link. Working together, they offer the most effective answers to industry's countless metal cleaning and processing needs.

Chemicals and compounds are provided for degreasing, washing and a wide range of other metal working processes. DETREX equipment, specifically designed for use with these materials, is precision manufactured and expertly installed, assuring maximum efficiency and productivity.

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BOX 501, DEPT. S-12 DETROIT 32, MICH.

LETTERS

(Concluded from Page 10)

eral errors in the article. The 1.375 diameter ±0.005 0.000 should read ±0.0005 and the perpendicular tolerance limit of 0.0002 in. in. change to 0.001 in./in. should read 0.0001 in./in. This may help readers who question the tolerances that appeared in your well-written article.

S. Farynyk

Cost Improvement Co-ordinator
Ansco Div.
General Aniline & Film Corp.
Binghamton, N. Y.

Likes Subject Matter

Please send me a reprint of "Memo to Busy Executives—Subject: How To Save Time" (Nov. 10, p. 86). Keep up the good work. I appreciate this type of subject matter.

Matthew P. Gillis

Project Engineer
W. L. Maxson Corp.
Old Forge, Pa.

• • •

We were much impressed with this article.

T. E. Battle

Cummins Engine Co. Inc.
Columbus, Ind.

Asks To Reprint Editorials

I feel that STEEL's editorials contain data which would prove beneficial to supervisors in our plant. I am president of the Incorporated Foremen's Club in the Berwick plant of ACF Industries. I feel that the valuable information in these articles could be passed on to our supervisors if we were permitted to copy your editorials in our club paper.

L. D. Muehlhof

American Car & Foundry Div.
ACF Industries Inc.
Berwick, Pa.

• *Permission granted.*

1958 Series Effectively Read

I notice that your 1958 Program for Management series has come to an end. Each article has been most interesting and I would appreciate having a personal copy of each of the subjects discussed.

Arnold L. Mays

Methods Engineer
Group V
Harrison Works
Otis Elevator Co.
Harrison, N. J.

• • •

The 1958 series is equally as good as the 1957 series. I have been distributing and circulating them in our company, and I am sure they are effectively read.

N. H. Miles

Industrial Engineering Dept.
Argus Cameras Div.
Sylvania Electric Products Inc.
Ann Arbor, Mich.

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for your Metals "Supermarkets"

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While our name may be different, our customers and friends can rest assured our traditionally high standards of service will remain unchanged. We are still intensely interested in your metals problem. We want you to choose the *one right kind* of material for your application. Our trained engineering staff is ready to work with you and advise you. Since we stock *all* the principal corrosion resistant alloys, we can and do give you unbiased opinions.

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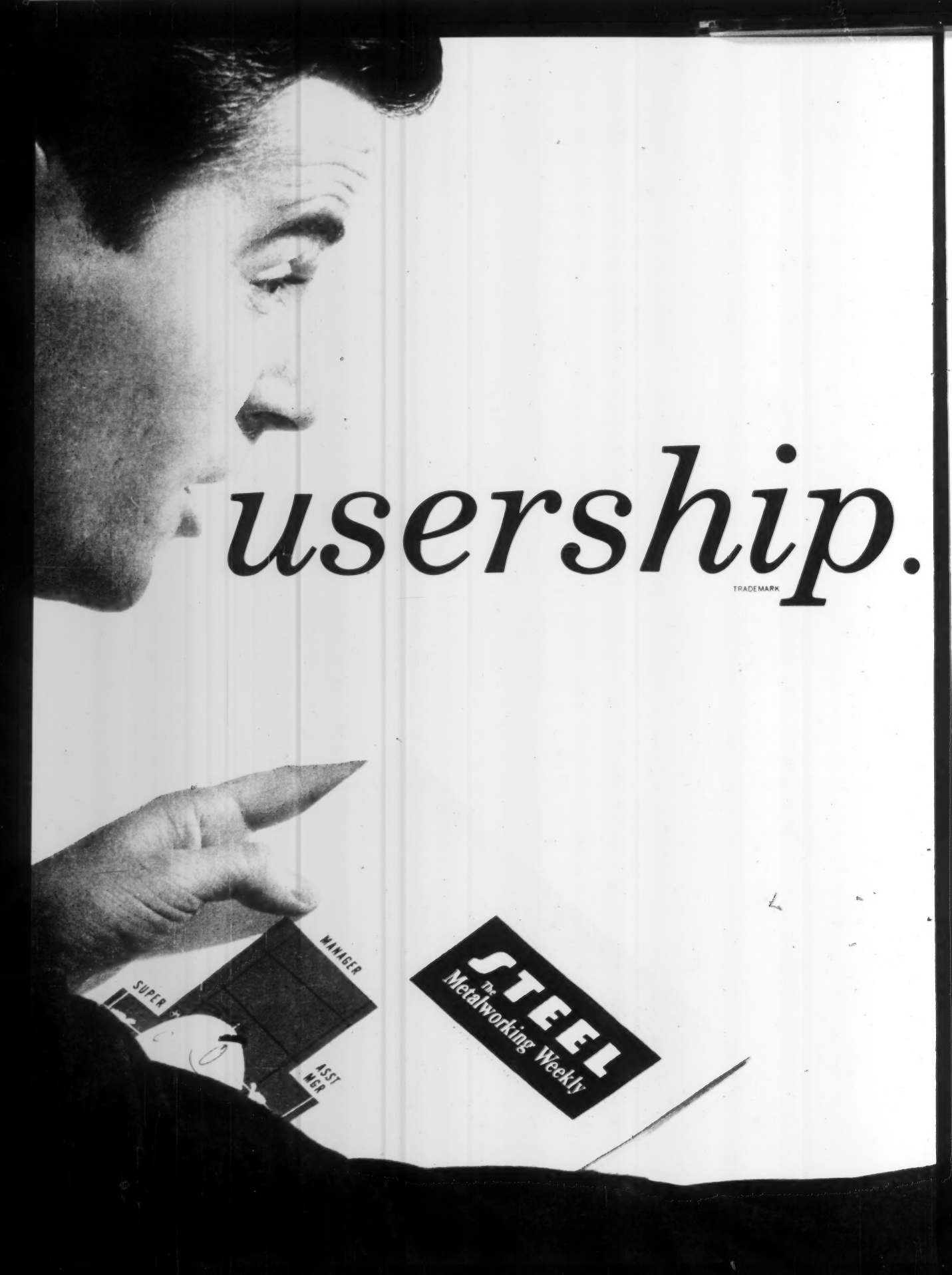
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STEEL
The Metalworking Weekly

. . . *is readership-in-action*

Usership is the step beyond readership. It sums up the dynamic power to move readers to action that is the life-force of an exciting and influential magazine.

STEEL is metalworking's *Usership* magazine. It serves the needs of metalworking's action-minded leaders as no other magazine does. And because STEEL serves these men so well, they *use* STEEL—base direct business action on what they read.

STEEL's report on "value analysis", for example, touched off a series of management meetings and discussions throughout metalworking.

Usership is also the measure of a magazine's ability to get action for advertisers. That is why today more advertisers are placing more advertising in STEEL than any other metalworking magazine.

usership is the strength of STEEL

TMI by-passes tonnage goals identified with most commercial production of tubing . . . to give its customers distinct advantages available only with the "closest tolerance" tubing! This organization concentrates *all* its abilities on *Thinking Big* about the production of the finest in close tolerance I.D. and O.D. stainless steel and special alloy tubing.

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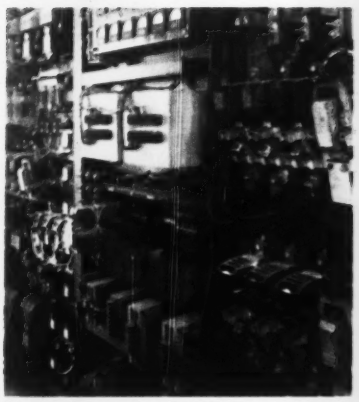
U. S. Steel Uses Load-O-Matic for Heavy-Duty Scrap-Salvaging Operation



Westinghouse Load-O-Matic hoist control panel for this 125-hp, 25-cycle installation.

Hoisting a heavy roll-end hour after hour for crushing open-hearth slag during scrap-salvaging operation is rugged duty for any crane — and on this 60-ton Alliance crane Westinghouse Load-O-Matic* assures long, dependable operation at the United States Steel Corporation's Ohio Works.

Because Load-O-Matic is a heavy-duty, yet precision a-c crane system built to industry standards, it is highly favored for applications that call for unusual stamina, ease of operation and low-maintenance cost.

The Load-O-Matic system with stepless speed control over the full load range eliminates initial cost and complexity of d-c conversion equipment. Components, including controls, motors, brakes and gearing, are Westinghouse Power-Up products, built to work together and backed by Westinghouse unit responsibility.

To see Load-O-Matic in operation, call your local Westinghouse salesman. For more information, write Westinghouse Electric Corporation, 3 Gateway Center, P.O. Box 868, Pittsburgh 30, Pa. J1-96124

*Trade-Mark

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Westinghouse

Purchasing Week

McGRAW-HILL'S NATIONAL NEWSPAPER OF PURCHASING

Vol. 1 No. 41

New York, N. Y., October 13, 1958

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$6 A YEAR U. S. AND CANADA $25 A YEAR FOREIGN

Financing Inventories To Become Tougher

Public Buyers

Washington—The cost of borrowing money is going up. Eventually it will get tougher to obtain financing for inventory growth although bankers appear to have plenty of money for that type of borrowing now.

This is the credit outlook from a purchasing point of view over the next six months as seen by government officials specializing in finance. It stems from a drive by the Federal Reserve and Administration to halt inflation by tightening credit.

Reports from bankers around the country indicate general agreeability toward short term loans, but a growing reluctance for long term, capital goods type of borrowing already's developing but not in all areas. So far

. . . Steel users may find tighter inventory controls the best hedge

"Let the other fellow carry the inventory" is a well-tried business principle that is taking on added significance for many manufacturers today.

As featured in a recent issue of PURCHASING WEEK, the cost of borrowing money is going up. Over the next six months, inventory growth financing will get tougher. Even now, the publication pointed out, there's a growing reluctance by bankers to make long-term, capital-goods type loans. The newspaper concluded that interest rates, too, are heading rapidly toward the high levels reached during 1957's tight-money period.

Faced with these new complications, steel buyers may well find continuance of recession-born, modified inventory policies the best hedge against tight money and higher interest.

For example, during the recent slump many companies proved to themselves that the varied facilities of steel service centers cut costs all along the line. They avoided long-term commitments and substantially reduced their need to borrow money. They released precious working capital for more productive purposes . . . freed valuable storage space . . . reduced handling costs and cut scrap loss, interest, insurance, taxes, etc.

This kind of cost-conscious buying is especially sound when you consider the unusually broad scope of Ryerson stocks, and the speed and dependability of Ryerson services. Buying cut-to-size steel—any kind, shape, size and quantity—gives you complete flexibility to meet quick shifts in production schedules. And you have the added assurance of getting uniform, high-quality steel—unequaled Ryerson *certified* quality.

Your Ryerson representative is well qualified to review the facts and help you get the maximum value for your steel-buying dollars. Call him any time to analyze your requirements with you.

RYERSON CERTIFIED QUALITY

RYERSON STEEL®

Member of the INLAND® Steel Family

Principal Products: Carbon, alloy and stainless steel—bars, structurals, plates, sheets, tubing—aluminum, industrial plastics, metalworking machinery, etc.

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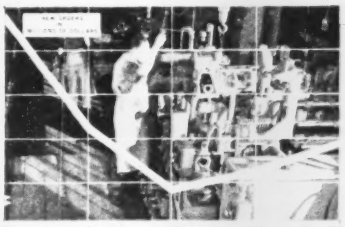
Machine Tool Orders Dip in November



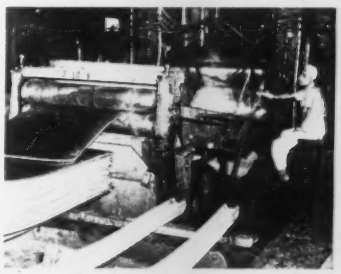
Look for final reports to show that net orders for machine tools in November were about 20 per cent below October's $37 million. The dip was caused by reductions in metalcutting machine sales. November orders for metalforming equipment will about equal October's—$8.5 million. Builders expect their upturn to start in 1959. Their estimates for sales next year: $455 million; in 1960 they expect sales close to $580 million (Page 27).

Economic Weathervanes All Point to 'Fair'

Look for new orders for structural steel to exceed 3 million tons next year, compared with an estimated 2.8 million tons booked in 1958 . . . Tool and die makers expect business to improve 15 per cent in 1959 over 1958 . . . Gas appliance men see a 9.1 per cent upsurge next year . . . Producers of industrial material handling equipment think 1959 sales will hit 10 to 12.5 per cent above this year's level.

Where the World Steel Industries Are Expanding

U. S. steelmakers are running into more and more competition from foreign sources. European and Japanese material is coming in at prices far lower than ours. What's more, some of our export markets are drying up as underdeveloped nations start to industrialize—and they almost always begin with a steel plant. Africa, Latin America, India, and the Communists are expanding most (Page 32).

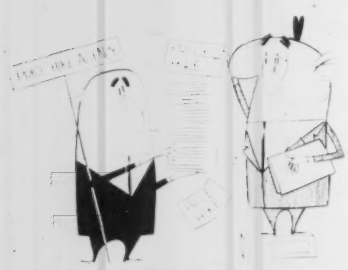


Rarick & Co. Exonerated by Local Members

The United Steelworkers resolution calling for the ouster of Dues Protest leaders is boomeranging. Four of the leaders in the rump movement have been tried by their local members and exonerated. Don Rarick (chief of the protesters), was declared innocent of dual unionism by his Local 2227. Nick Mamula (first lieutenant in the movement) was cleared by his Local 1211. Two other rebels—Anthony Tomko and Edward Galka of Local 1408—were tried earlier and exonerated. The decisions can, and probably will, be appealed to the international's executive committee which meets in Chicago, Jan. 6-7. Here's a hot potato for Steelworker President David

McDonald. The Dues Protesters were apparently squelched for good last September at Atlantic City, but now they are showing faint signs of life.

Will You Have To Notify U.S. of Price Hikes?



Take another look at an old idea favored by some congressmen: You would be required to notify the Commerce Department of a price hike six months in advance if your firm does 50 per cent of its business in consumer products. Sen. Joseph O'Mahoney (D., Wyo.) first sponsored the idea a decade ago (Page 36) and is dusting it off for the next Congress' consideration. Prospects: It won't get passed, but it will get surprisingly serious consideration from many of the more liberal legislators.

Standardization of Parts Cuts Costs

It's costly and confusing to purchase duplicate parts from different venders and stock them under different part numbers. By standardizing all ball bearings used in its regular line, Norton Co.'s Grinding Machine Div. cut product costs and helped the purchasing department do a more efficient job (Page 62). Norton finds that time can be saved by letting purchasing agents choose venders from an approved list and making substitutions without consulting the engineer. (Bearings are not always available from the first vender contacted.)

How To Sharpen Your Marketing

The keener your competition, the sharper your marketing must be. To make it so, you need accurate, meaningful, up-to-date information about your competition, customers, and costs. You need a man in your organization who can gather such data, analyze it, and present it to your managers in useful form. The man you seek is a modern market research director (Page 34).

LP-Gas Continues Its Expanding Ways

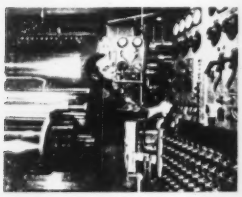
Industry sales of liquefied petroleum gas (butane and propane) in 1958 increased 9.4 per cent over 1957's to an estimated 7.6 billion gallons, say Phillips Petroleum Co. officials. Sales of the fuel for industrial and miscellaneous uses increased 9.2 per cent, to 748.4 million gallons. Since 1950,

LP-gas sales have increased 500,000 gallons annually, on the average. Prospects are for a typical gain next year.

Mining Machinery Shipments To Climb

Shipments of mining machinery should climb 15 to 20 per cent in 1959, says the Business & Defense Services Administration, if estimates of increased production of coal and steel hold true. The mining machinery industry's economic climate runs three to six months behind the over-all outlook for capital goods because of extensive leadtime. Serious inquiries picked up in the last quarter of 1958, says BDSA.

Electrical Firsts Update Aluminum Plant

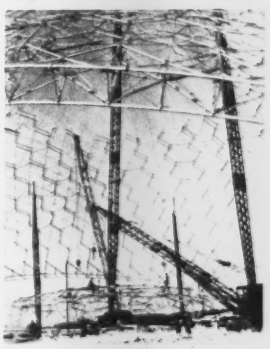


Your plant can be more modern if you recognize the importance of a well-engineered electrical system. That's the attitude of Kaiser Aluminum & Chemical Corp. (Page 60). By pooling engineering effort with General Electric Co., Kaiser equipped its Ravenswood, W. Va., plant with large battery chargers, adjustable speed mill drives, closed circuit television, and automatic gage controls. Space is saved on two of the potlines, where ore is refined, by using pumpless rectifiers.

Bethlehem Has Until February To Appeal Merger Case

Look for Bethlehem Steel Corp. and Youngstown Sheet & Tube Co. to appeal Judge Edward Weinfeld's ruling prohibiting their merger. They have until Feb. 18 to make their move, 60 days from Dec. 19 when the judge signed a final decree.

ASM Dome Shows Metal at Work



The weblike structure pictured to the right is the world's largest openwork geodesic dome. The 103 ft "space lattice" serves as an elaborate landmark for the new American Society for Metals headquarters near Cleveland (Page 39). Although designed as an eye catcher, this structure has more significance than mere appearance. It shows what can be done architecturally with aluminum. The ASM headquarters will use all the metals in some manner.

Real GNP in 1958 Dips Only 3% Below 1957's

Despite the recession during much of 1958, our gross national product for the year will be only 3 per cent under the 1957 total, in terms of stable

dollars. The current-dollar total for 1958 will be $437 billion, compared with $440 billion in 1957 (in terms of last year's dollars).

Welded Rings Come into Their Own

Take a strip of steel; bend it into a hoop, weld it. Result: A ring that costs less than its solid counterpart and is just as good. Two metallurgists at Dresser Mfg. Co., Bradford, Pa., assembled some facts and photomicrographs to prove that good flash buttwelds properly heat treated can be almost indistinguishable from the base metal (Page 68).

Foundries Plan Equipment Purchases

Memo to foundry suppliers: Seven of ten foundries plan to purchase new equipment or make other capital improvements in 1959. Their expectations stem partly from an improved business outlook. That's the finding of a survey of 2800 foundrymen. Nearly one out of six plants will purchase conveyor equipment (Page 29).

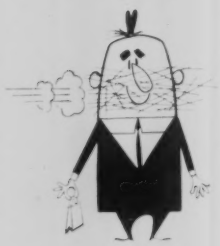
Inco Counts the Losses After Canadian Strike

The 87-day strike at International Nickel Co.'s Canadian mines ended Dec. 19 when the company and union reached a compromise. The walkout means a loss to Inco of more than 50 million lb of nickel, 50 million lb of copper, and 33,000 ounces of platinum.

Automotive Trends

Because of Chrysler Corp. strikes, Plymouth may slip to the No. 5 spot in December sales from No. 3 in November . . . Studebaker-Packard Corp.'s Lark production will be increased today (Dec. 29) from 60 to 70 units an hour to keep up with dealer orders . . . The eight car makes in the medium price field have taken a persistent 30 per cent of domestic sales each ten-day period since early November, which puts them a notch above the 28.5 per cent tabbed in the January-October period. It indicates that the sales erosion of mediums, which started in 1957, may have ended.

Straws in the Wind



Aluminum Co. of America will begin initial operations at its newest and largest aluminum refining plant, at Point Comfort, Tex., Feb. 1 . . . Personal income in November was at a seasonally adjusted annual rate of $360 billion, $2.5 billion higher than in October . . . The National Office Furniture Association plans a sales campaign to sell office furniture to more executives for their homes; the association figures that 55 per cent of about 5 million men do some work at home and need office equipment there . . . Henry J. Kaiser Co. is expected to submit a report on the Volta River project by February; the development in Ghana involves bauxite projects and construction of a railroad . . . A volume increase of up to 20 per cent is seen for architectural porcelain enamel in 1959.

Operates MARVEL No. 8 Metal Cutting Band Saw by FEEL!

sightless operator uses saw to FULL CAPACITY!

Among the many advantages of the MARVEL No. 8 Band Saw is the simplicity and convenience of operation built into this universal metal cutting saw.

Here's a case in point. Paul Stevens, who is totally blind, is employed by the Purkett Manufacturing Co., Joplin, Mo., manufacturers of laundry equipment, as a MARVEL No. 8 Band Saw operator. He operates two MARVEL No. 8 Band Saws, filling orders from the fabricating department for bars, shapes and even mitres. He handles the entire operation without assistance from anyone.

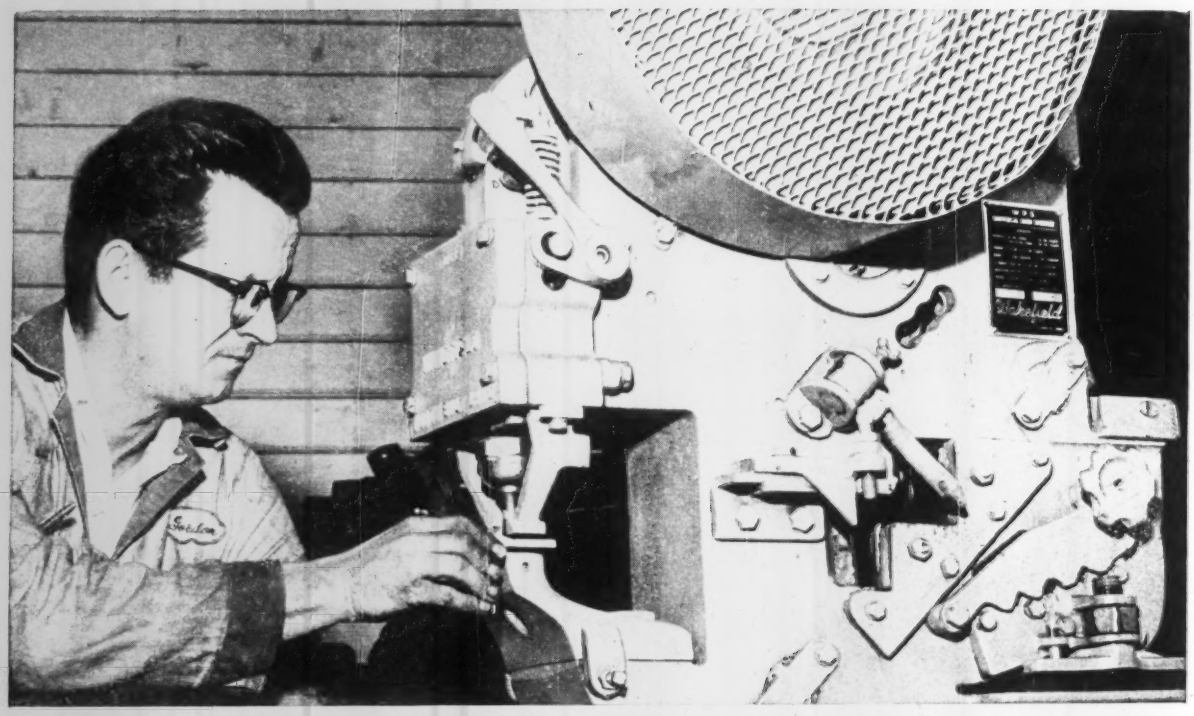
Thoroughly familiar with his stock and bin locations, he sets up the saw, measures lengths, and turns out work accurate to $\frac{1}{32}$". Almost any conceivable sawing job is handled on these machines, from the smallest, most delicate work to heavy beams, up to 18". They will cut-off bar stock, pipe, tubing, moulding and structural shapes – saving hours of machining time.

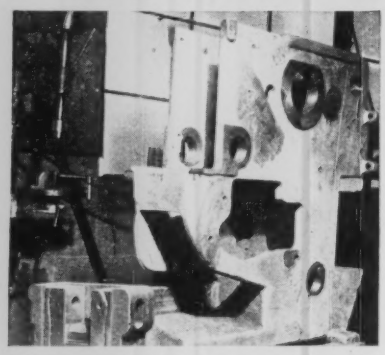
The MARVEL No. 8 vertical column design, table height working surface, easy accessibility to simple operating controls, fast and positive power or manual feed control, column and blade tilting to any angle up to 45° right or left of vertical for cutting at an angle or mitre – are just a few design and operating features that make MARVEL No. 8 Band Saws the best all-around saw you can buy.

For the complete story, write for the new Bulletin 875, which illustrates and describes this outstanding universal metal cutting saw.

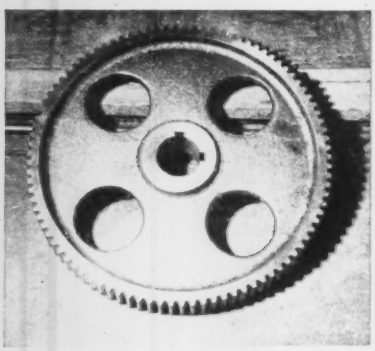
ARMSTRONG-BLUM MFG. CO.
5700 BLOOMINGDALE AVENUE, CHICAGO 39, ILLINOIS

Metal Cutting MARVEL SAWS
Better Machines–Better Blades





Cast frames with tensiles up to 200,000... eliminate flame cutting of rolled sheet steel.



Cast gears that Brinnel to 475... that withstand heavy loading even with ordinary lubricants.

Machine bearing surfaces right in the castings... eliminate bushings, without sacrificing service.

Build machines like this for less money ...the ductile iron way

Wakefield, Inc., of Salt Lake City, Utah, makes 95% of the cast parts for their "Iron Worker" portable mechanical press of ductile iron.

With ductile iron, they benefit two ways. First, they get the *process* economies of cast iron – good castability, machinability, moderate cost. Second, they gain many of the product advantages of steel – tensile strength of 73,000 to 80,000 psi, yield strength of 63,000 to 67,000 psi, good elastic modulus, excellent impact resistance. In addition, they get the excellent wear resistance of cast iron. Castings are supplied by Backman Foundry, licensed producers of ductile iron.

For more information about ductile iron castings, write for new 28-page Inco bulletin, "Ductile Iron Digest."

THE INTERNATIONAL NICKEL CO., INC.
67 Wall Street New York 5, N. Y.

ductile iron...the cast iron that can be twisted and bent.

The Hard Sell Is Back!

One of the best business bellwethers, in our opinion, is the industrial supply industry.

It is made up largely of members of the American Supply & Machinery Manufacturers' Association. They make taps and dies, fasteners, rubber products, bearings, chain, small tools, abrasives, hacksaw blades, files, and the multitude of other items purchased by industry for both production and maintenance.

In 1954, a rising ASMMA new order index forecast the general uptrend in business during 1955, 1956, and 1957.

In 1957, the index sagged during a period of high-level activity to anticipate the 1958 recession.

In the spring of 1958, the index rose sharply in the expectation of a better year for business in 1959.

ASMMA members do more than watch the ups and downs in their order index. Many also are preparing for the hard sell in 1959 by reducing the size of sales territories, adding salesmen, and increasing advertising budgets. Here is what 296 companies surveyed by ASMMA reported:

Sales Territories—In 1959, 56 companies are reducing the size of sales territories per salesman; 183 are leaving them unchanged; seven are increasing them. In 1958, territories were reduced by 42, left unchanged by 177, and increased by 33.

Sales Forces—In 1959, sales forces are being increased by 132 companies, left unchanged by 108, and decreased by only six. In 1958, sales forces were increased by 94, left unchanged by 116, and decreased by 40.

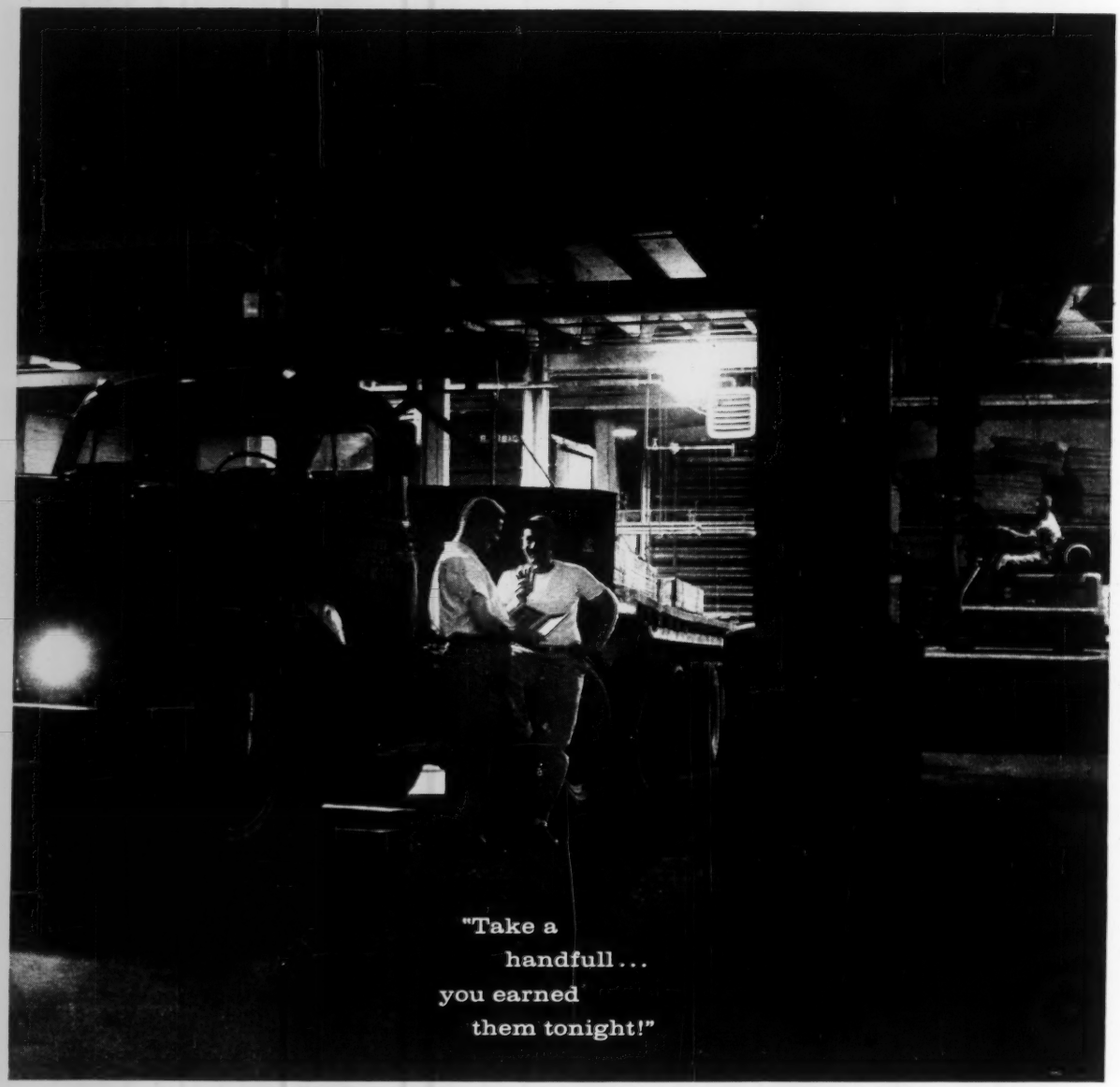
Advertising Budgets—In 1959, 127 companies will spend more money for advertising, compared with 1958; 104 will spend the same amount; and only 14 will spend less. In 1958, 69 companies increased budgets, compared with 1957; 60 left them unchanged; and 122 reduced them.

Those figures, of course, tell only part of the story about the way this industry is going after sales in 1959. For example: One company will have its distributors stock larger quantities to speed up deliveries to customers. It will also train distributor salesmen in its home office to become application experts, not just order takers.

Take it from the industrial supply industry, business is better, but the hard sell is back!

Irwin H. Such

EDITOR-IN-CHIEF



The Braves never had a warmer welcome than Charlie Gates got in Milwaukee that night.

The Friday night crew was standing by. The whole plant had been alerted for weekend work. Charlie had just come through with a real payload–a truckload of Inland Steel sheets, urgently needed by a sheet metal fabricator who was working on a contract for the top platforms of power mowers. Whether or not this power mower manufacturer kept a valuable contract depended on the fabricator's beginning delivery of parts by Monday morning.

On very short notice, Inland was able to do its part by making delivery of a specially required steel a full week ahead of time. It isn't easy to juggle production schedules this way; it isn't always possible. But what's important–when you do business with Inland you'll find people who have a willingness to go out of their way for you.

Open July 1–New Inland District Sales Office in Houston, Texas

INLAND STEEL COMPANY

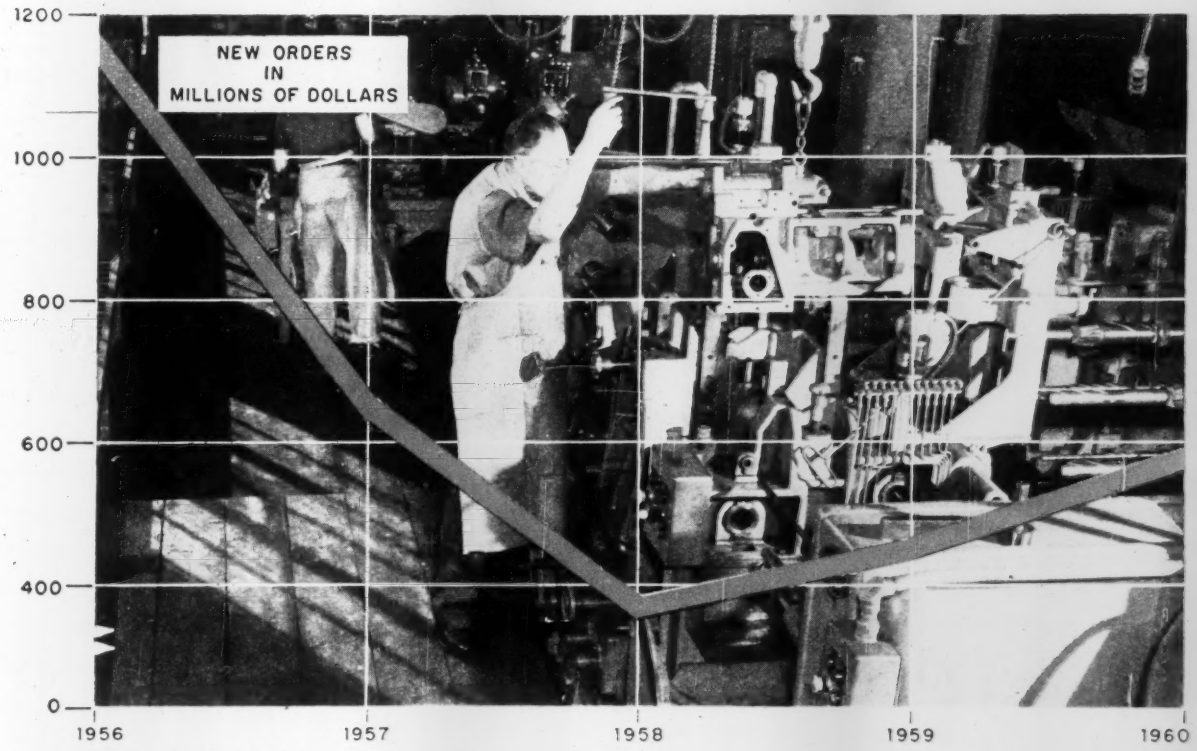
30 W. Monroe St. · Chicago 3, Ill. | *Sales Offices:* Chicago · Milwaukee · St. Paul · Davenport · St. Louis · Kansas City · Indianapolis · Detroit · New York · Houston

INLAND

Other Members of the Inland Family
JOSEPH T. RYERSON & SON, INC.
INLAND STEEL PRODUCTS COMPANY
INLAND STEEL CONTAINER COMPANY*
INLAND LIME & STONE COMPANY*

*Division

RECESSION IN MACHINE TOOLS . . . fast in, slow out



Source: National Machine Tool Builders Association.

*Estimated by STEEL

Machine Tool Builders See Upturn

THE machine tool industry is making the subtle shift from a starvation diet to a period of short rations.

With well over $1 billion a year capacity, the industry sputtered through 1958 with new orders at roughly 35 per cent of capacity. Now the builders expect a modest upturn, but they are afraid they will be going at less than 50 per cent of capacity in 1959 and 1960.

Here's the outlook as seen by 78 builders who reported their opinions to STEEL: 1959 new orders will reach $455 million. In 1960, they will climb to $580 million.

• **The Upturn**—There is a bright side. Builders feel they have reached bottom and are on their way back. They expect a 25 per cent pickup in sales next year, and another 27 per cent gain the following year. In this respect, they'll outgain most industry segments.

But even with those gains, 1960 machine tool business won't equal 1957's $642.9 million, or 1956's $1.2 billion in net sales.

One builder tells STEEL: "I believe the machine tool industry must revise its estimates of what constitutes boom conditions." The problem is that, like the golfer who considers a 300 yard drive his norm because he once hit one, industrialists can too easily figure business peaks as "normal."

The consensus: The boom of the 1960s is about to start, but it will be a gradual rise all the way for machine tools.

• **Sparkplug**—STEEL listed 11 factors that might account for a comeback in machine tool sales, then asked the respondents to rate them in order of importance.

A general upturn in the U. S. economy was ranked first (2 to 1). Nothing will stimulate capital spending more than a general feeling of confidence that all's well and will get better.

More buying by automobile makers was a poor second. Builders consider the auto industry their big-

gest single user. This is true for both special and standard machine tools, according to survey returns. Builders believe automotive purchases of machine tools won't reach boom levels until 1962 or later.

• **Depreciation** — Ranked third in the list was "liberalized depreciation allowances." Nine builders figure this will do more to stimulate a boom than any of the other ten factors.

• **Lesser Stimulants** — Following better depreciation policies, these factors were listed in this order: More buying by aircraft and missile makers, more aggressive machine tool sales programs, more machine tool purchases by the farm and road equipment makers, more defense spending, new machine tool designs, and more capital spending by appliance makers.

• **Rear Guard**—Nearly dismissed as boom generators were higher tariffs on imported machine tools and more U. S. machine tool exports.

This reflects one of the industry's most discouraging pictures. Roughly 30 per cent of the industry's production used to be shipped to foreign buyers. In 1958, only about 10 per cent went out, and builders see little chance of bettering their competitive ability in the world market. (See accompanying chart.) Price is the chief obstacle.

One deterrent to machine tool exports: The European Common Market. It will promote the exchange of goods among member countries, discourage buying of U. S. machines.

• **Tariffs No Answer** — Though higher tariffs on imports may relieve the pressure in some areas (one out of every two radial drills sold here during 1957 was built abroad), most builders don't feel the real challenge would be met. Many, including Ralph E. Cross, executive vice president, Cross Co., Detroit, feel the solution is not one of protection but of becoming more competitive with foreign builders.

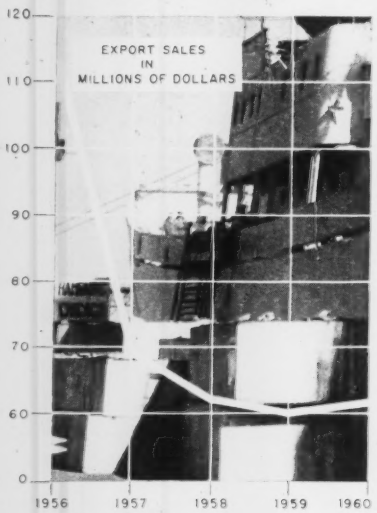
Walter K. Bailey, president, Warner & Swasey Co., Cleveland, told STEEL: "American machine tools have always cost more than comparable foreign makes. But people have preferred American machines because they outranked foreign machines in design and performance.

"Many of today's foreign machines, however, are coming dangerously close to ours in this respect. To maintain our advantage, we must again outengineer and outdesign our foreign competition."

• **Tough Trek**—Instead of exporting more machine tools, builders are exporting more capacity, where U. S. machines won't compete. It's difficult to imagine a tourist visiting a major European city for more than a day or two without running into a U. S. machine tool builder who's visiting his foreign plant, or getting ready to build one, or looking for ways to license his machine designs to a foreign builder.

The long, hard pull back to a real boom, like that of the mid-'50s, will be made without much export business, with severe competition from imports, and probably with less than ideal depreciation practices. Many a builder is hopefully looking to major machine tool technical advances (being readied for the 1960 machine tool show) to open the floodgates on the "soaring sixties."

THE EXPORT STORY



Source: NMTBA.
*Estimated by STEEL.

Relatively high wage rates paid by U.S. builders keep their machines priced above those of foreign competitors. Builders see little chance of improving the situation—feel they will continue to be at a disadvantage in the world market

Electrical Orders Up

But increases won't be uniform across product lines next year, says Westinghouse in forecast

STEADY IMPROVEMENT in billings and new orders is seen for Westinghouse Electric Corp. during 1959, says Gwilym A. Price, chairman, although sales will likely be short of the 1957 high. Sales and order increases will not be uniform across industry's product lines.

Other highlights of the Westinghouse forecast:

• **Profit Squeeze** — The tightening squeeze on profits will make the electrical industry look beyond rising volume for profit salvation. Matching profits with fast growth will be the industry's most challenging problem in 1959.

The forecast of improved sales and orders anticipates increasing personal consumption expenditures, business inventory accumulation during the first six months of 1959, and rising trends in defense products, light industrial equipment, and atomic powerplant equipment for military and civilian use.

In the electric utility field, the drop in shipment of heavy generating apparatus will be somewhat offset by an increase in billings of distribution equipment. New orders are expected to show marked improvement over 1958 low points.

• **Defense Up**—Orders for defense products are expected to keep rising and then possibly level out in the second half of 1959. Westinghouse predicts sustained atomic power growth with yearend backlogs (mostly Navy nuclear) to be about 30 per cent above 1957. Reactor plants are being built for 20 submarines and the first atomic-powered cruiser and carrier.

A new company, Westinghouse International Atomic Power Co., a subsidiary of Westinghouse Electric International Co., has been formed to serve the nuclear power needs of Euratom nations and other European countries. In November, the AEC issued the first license for exports of a U. S. produced reactor—a Westinghouse unit for Belgium.

Foundries Step Up Buying

SEVEN of ten foundries will buy new equipment or make other capital improvements next year. That's what *Foundry* (STEEL's sister publication) discovered when it queried 2800 foundrymen on their plans and expectations for 1959. Other findings: 80 per cent of the respondents expect their 1959 tonnage production to exceed that of 1958; 2 per cent predict a decrease; 18 per cent expect no change. Average increase expected: 20 to 25 per cent. Nine of ten expect their second half business to be as good or better than that of the first half. Here's the breakdown:

ANALYSIS BY TYPE OF FOUNDRY:

	Will Make Capital Expenditures	Expect Production Increase (1959, vs. 1958)
Gray iron	73%	81%
Malleable iron	75%	95%
Steel	76%	86%
Nonferrous	60%	76%
BY PLANT SIZE:		
Employing 250 or more	83%	89%
Employing 100 to 249	76%	85%
Employing 50 to 99	69%	83%
Employing 20 to 49	59%	82%
Employing less than 20	48%	65%

ANALYSIS OF EQUIPMENT PURCHASES:

Of all foundries . . .

. . . 19% will buy sand preparation equipment.

. . . 16% will buy conveyor equipment.

. . . 5% will buy heat treating and annealing equipment.

. . . 23% will buy molding machines.

. . . 8% will buy trucks and front-end loaders.

. . . 6% will buy hoists.

. . . 11% will buy blast cleaning equipment.

A Look at 1970

Screw machine industry foresees expansion and specialization, more engineering and research

THE SCREW MACHINE products industry must learn how to make greater profits on shorter runs and to offer parts from such runs at competitive prices without sacrifice of precision or quality. So concluded the 60 executives attending the recent two day seminar of the National Screw Machine Products Association at Niagara Falls, N. Y. They were looking 12 years ahead.

They found expansion a necessity because the industry must keep pace with the American economy. Result: Increased specialization with fewer, but larger customers. Many producers will become captive shops of these buyers. Smarter producers will do less selling and servicing to those who insist on having captive shops in addition to independent suppliers.

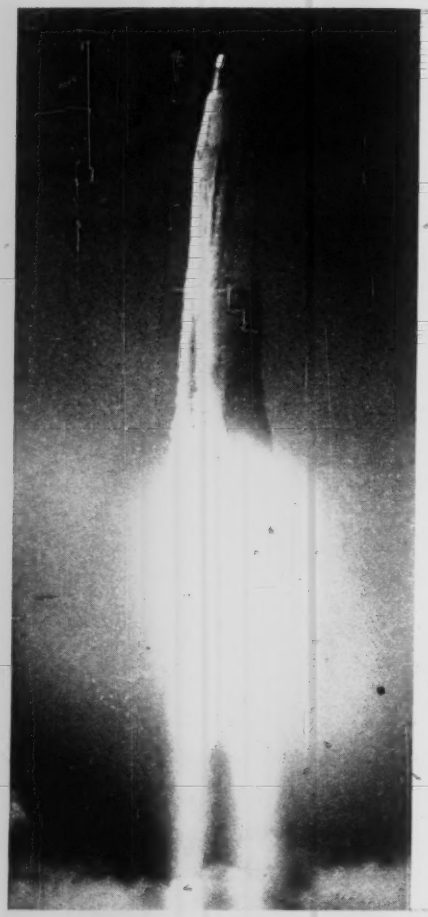
• **Improvements Cited**—Great improvements were foreseen in machine tools by 1970. Producers of parts said increased productivity in the last decade came from improved materials and tooling rather than the basic machine. By the target date, more difficult machining would result from stronger materials, pointing up the necessity of technical aid from machine tool builders.

While net productivity tonnage will increase, reduced operating costs will be partially taken up by additions to engineering and research staffs.

Shenango Orders Ore Ship

An $8 million Great Lakes ore carrier, *Shenango II*, will be completed early in '59. It will replace *Shenango* of the Shenango Furnace Co. fleet.

The new ship, 710 ft long with a molded beam of 75 ft and a depth of 37½ ft, is being built at the Toledo (Ohio) yard of American Ship Building Co. It will be oil fired, powered by an 8500 shaft horsepower geared turbine, and have a speed of nearly 14 knots. Dead weight capacity: 25,000 long tons.



Aircraft-Missile Boxscore:

1. Recent cancellations:

Regulus II (Navy surface to surface missile)	Chance Vought
Goose (AF decoy missile)	Fairchild Aircraft
Rascal (B-58 launched bird)	Bell Aircraft
F8U-3 (Navy fighter)	Chance Vought

2. Some cutbacks:

Seamaster (jet seaplane)	Martin
B-58 (medium bomber)	Convair

3. Known duplications:

Bomarc (AF)	antiaircraft missiles	Boeing
Nike Hercules (Army)		Douglas, Western Electric
Talos (Navy)		Bendix Aviation, McDonnell
Jupiter	IRBMs	Chrysler
Thor		Douglas
Atlas	ICBMs	Convair
Titan		Martin

4. And doubtful futures:

Camel (AF-AEC atomic plane)	Lockheed, Convair, GE
F-100, F-101, F-102, F-104, F-105, F-106 (AF fighters)	North American, McDonnell, Convair, Lockheed, Republic
B-52 (AF heavy bomber)	Boeing

Missiles Mean Big, Risky Business

THE SIGNIFICANCE of our man-in-space program (called Mercury) to metalworking's defense sales is not yet clear.

T. Keith Glennan, head of the National Aeronautics & Space Administration, says the program will take "several" years. Reliable estimates range up to six years, with a cost of $200 million. Rocketdyne Div., North American Aviation Inc., Los Angeles, has the contract from NASA to build a liquid fueled engine with 1.5 million lb thrust. That's good enough, say Pentagon sources, to send up a manned satellite weighing 10 tons, or an interplanetary vehicle of 2.5 tons. (Probes at Mars and Venus, similar to the Air Force's and Army's shots at the moon will probably be made in 1959 with Thor/Able and Juno rockets, perhaps with an Atlas.)

North American now has the contracts for the top fighter and bomber, the F-108 and the B-70; the Hound Dog, a long range, bomber-to-surface bird; part of our first solid fueled ICBM, the Minuteman; the Rover nuclear rocket project; and the X-15, the closest thing to a manned missile we have.

• **Contrast** — Chance Vought Aircraft Inc., Dallas, just lost a $100 million contract for the F8U-3, a Navy all-weather fighter, and its contract for the Regulus II, a surface to surface missile. The Navy chose McDonnell Aircraft Co.'s (St. Louis) F4H-1 instead of the Chance Vought plane and cut the Regulus for economy's sake.

Plans to fire Polaris from surface ships (thus removing the need for the Regulus) have been hinted at by Rear Adm. W. H. Raborn, special projects director. He notes that the Polaris is now fired from a surface ship to simulate undersea firings. Twenty-one of 24 tests have been successful, says the admiral.

• **Congressional Pressure**—Chance Vought's loss can be blamed on Congress. The Navy wanted the F8U-3, but Congress said it could have only one new fighter of that type. Douglas Aircraft Corp. and Boeing Airplane Co. are in a similar fix. Capitol Hill thinks we need only one antiaircraft bird for the defense of U. S. cities, so it wants either the Nike Hercules or Bomarc canceled. Less pressure is being put

How Contractors Fare

Mace (AF surface to surface bird)	Martin, Goodyear Aircraft
Nike Zeus (antimissile missile)	Douglas, Western Electric

5. Good futures:

Hound Dog (AF air to surface bird)	North American
Bullpup (Navy air to surface missile)	Martin
Snark (AF subsonic ICBM)	Northrop
F4H-1 (Navy fighter)	McDonnell
F-108 (AF fighter)	North American
B-70 (AF heavy bomber)	North American
S2F-3 (Navy antisub plane)	Grumman

6. But developments are coming fast:

Minuteman (ICBM)	Boeing, Avco, North American, Thiokol, Aerojet General
Pershing (Army's Redstone replacement)	Martin
Polaris (Navy IRBM)	Lockheed
Bold Orion (AF air to surface bird)	Lockheed, Martin, Thiokol
Eagle (Navy air to air missile)	Bendix Aviation, Grumman, Aerojet General
Rover (nuclear rocket)	North American
X-15 (plane to fly 100 miles high)	North American
Dyna-Soar (to circle the Earth)	Boeing
Sentry (reconnaissance satellite)	Lockheed
Mercury (man in space)	North American

on the AF to decide between the Jupiter and Thor since Defense Secretary Neil McElroy implied Pentagon emphasis was shifting from IRBMs to ICBMs. Unofficially, both the Jupiter and Thor will be allowed to live out present contracts only.

Mr. McElroy's decision appears based on the reluctance of North Atlantic Treaty Organization countries to take IRBMs as fast as we wished to provide them, and on the recent 6300-mile flight of the Atlas.

• **Success Breeds Failure**—The Atlas (it will be operational in 1959) worries Martin Co., Baltimore, producer of the Titan. A full year behind the Atlas, though more sophisticated, it may never pass from the development stage because of the Atlas' success, and AF plans to ask Congress for a speedup in the Minuteman program. Washington quarterbacks argue that an operational Minuteman by 1961 is possible, so why spend money on the Titan, which won't be operational until 1960.

Award of a $29 million contract to American Machine & Foundry Co. in November for the Titan's launching system indicates the full test program will be completed.

Looking ahead to the B-70, economy minded members of Congress and the administration wonder how many B-58s and B-52s we should build. Apparently, about 50 of the medium bomber are planned, while maintenance of Boeing's B-52 is indicated through 1960.

De-emphasis of the plane, but emphasis on the weapon it carries, seems to be the trend of military thinking, as we move closer to the true missile age. The AF has named Lockheed Aircraft Corp., Martin, Thiokol Chemical Co., and Grand Central Rocket Co. to build the Bold Orion, a solid fueled, air to surface bird with a 1000-mile range. The Navy picked Bendix Aviation Corp. and Grumman Aircraft Engineering Corp. for the Eagle, a long range, air to air missile.

• **Work Horse Weapons**—Safe for a while at least are some of the missiles which are plane launched or ship launched. North American has a $19 million production order for the Hound Dog, the first production contract its Missile Div. has ever had; Martin is producing Bullpups for the Navy on a $20 million contract. Sidewinders and Sparrows will be fired from the F4H-1.

Contrary to expectations, our subsonic ICBM, the Snark, has another $50 million worth of life left in it.

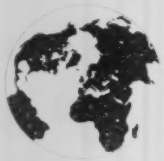
An airplane that will be around through 1960 is Douglas' A3D-2. The Navy granted a contract for $26 million for its heaviest carrier bomber. Missiles like the Falcon and LaCrosse continue in production. The Hawk will soon be in operation, says the Pentagon, but its status is not firm because it is an antiaircraft weapon. Korea is going to buy some Matadors. The Mace, a surface to surface weapon, is reported in final development stages.

• **Project Discoverer**—The Advanced Research Projects Agency will launch several satellites (maybe one a month) next year, starting with a 1300 lb object, and possibly ending with a 10,000 lb job winging over our heads.

The shots are designed to contribute to Mercury.

Putting the 8800 lb Atlas into orbit primarily proved our guidance ability. The next effort with the Atlas will be to have an 8800 lb (or heavier) satellite released into orbit at a given point in space.

Other preliminary steps to manned space craft include the X-15 and Boeing's Dyna-Soar. If Discoverer's shots pan out, and NASA's half dozen shots encounter no unexpected trouble, we will presumably be able to cut the time needed for Mercury significantly and move into the age of space weapons in the first half of the 1960s. That will call time on the B-70 and F-108, shorten the useful lives of our ICBMs, and probably lead to a family of missiles designed specifically to be launched from satellites. Finally, the age of countersatellites will be with us.



Where Steel Is Gaining the Most

Production or capacity changes in percentages

Region or country	1955 over 1939	1956 over 1955	1957 over 1956	1958 over 1957(a)	1960 over 1958(a)
Total Africa	299.7	2.3	12.4	9.1	24.5
South Africa	291.0	1.6	11.9	9.5	21.1
Middle East	—	—	14.3	—	6.3
Far East	73.6	21.8	12.9	16.3	35.8
China Mainland	410.1	49.3	20.2	40.4	21.4
India	62.2	1.9	1.2	14.7	200.0
Japan	40.5	18.1	13.1	8.0	17.9
Oceania	91.1	5.0	21.5	3.3	25.0
Latin America	1,127.0	11.0	8.2	8.4	63.6
Argentina	985.0	6.5	8.4	13.6	260.0
Brazil	923.0	14.2	11.1	8.1	20.9
Chile	—	12.1	5.0	—	22.5
Mexico	888.3	15.5	2.4	11.1	14.1
Venezuela	—	—	—	—	2,750.0
North America	123.7	0.9	2.3	24.4	8.8
U.S.	121.7	1.6	2.2	24.8	8.1
USSR	57.2	7.4	4.9	5.1	27.4
Europe					
ECSC countries	46.0	7.9	5.3	14.3	9.0
United Kingdom	49.7	4.4	5.0	4.1	7.1
Others	138.1	10.1	13.1	4.2	34.8
Eastern Europe	112.8	7.8	8.7	7.4	14.8
World total	98.7	4.8	3.4	15.5	15.4

(a) Estimated capacity

World Steel Capacity Is Expanding

WORLD steel production will reach only about 294.7 million tons this year, the lowest total since 1954, but expansion of world capacity continues. Output in 1959 should equal 1957's 322 million tons; by 1960, it may climb to 335 million.

Nearly all major steel producing countries took a shellacking this year, and the U. S. led the list. Other countries that fell short of their 1957 pace: Canada, Great Britain, Japan, Sweden, Belgium, Italy, West Germany. All Communist countries reported increases.

• **South Africa**—Mills in the Union of South Africa are expected to turn out about 2.1 million tons of steel in 1958, vs. 1.8 million last year. The growth of the area's steel industry has been steady but unspectacular (see table).

The odds are heavy against South Africa ever producing enough steel to meet all its needs. (Main reason: Iron ore and other natural resources aren't plentiful enough.) But it does produce almost all its own fasteners, wire products, springs, tubes, and pipes.

Expect South Africa's steel industry to continue its steady growth. Production in 1959 might climb as high as 2.5 million tons. But the area will stay a rich export market.

• **India**—Steel output in India this year will be 1.9 million tons, slightly below the '57 mark, but the setback is only temporary. Indians know they can't become a world power without a strong steel industry, and, to get one, they're playing all the angles.

By 1960, Indian officials say, steel capacity in the crowded country will have expanded 260 per cent over 1956-57 levels. Production will have jumped 231 per cent, they add.

They'll probably succeed. But to do so, they're forced to walk the tightrope between Russia and the U. S. Soviet money spends as easily as American. Example: India is feeling out the U. S. attitude toward financing a 1 million ton steel plant. Indians say the mill would cost about $200 million in foreign exchange and $100 million more in local costs.

The kicker: Russia is willing to finance the project, leaving the U. S. an alternative—finance it or risk greater Soviet influence in India.

Three other mills (each with 1 million tons of capacity) are already under construction. Great Britain, West Germany, and Russia are each financing one. Completion of the three will raise India's capacity to about 6 million tons.

The Indian government plans enough steel production by 1961 to meet domestic needs and export about 250,000 tons annually.

• **Japan**—The Japanese steel industry is the sixth largest in the world. Production in 1958 will approach 13 million tons, vs. about 13.9 million last year. Output in 1959 should surpass 1957's, perhaps reaching 14.5 million tons. United Nations estimates indicate capacity will reach 16.9 million tons by 1960.

• **Egypt**—For all practical purposes, Egypt has never had a steel industry. It's trying now but may not succeed. A modern steel mill (capacity: 265,000 tons yearly) has been built 18 miles south of Cairo, with $54 million invested so far.

It seems unlikely that Egypt will be able to produce steel as economically as it could buy it. The country has no coal, so all coke must be imported. The only source of iron ore is 550 miles from the mill (at Aswan).

• **Italy**—This nation's steel industry is the seventh largest in the world and claims to be Europe's fastest growing. Production this year is going to hit about 7.1 million tons (1957 output: 7.5 million tons) but should climb next year to around 7.6 million tons.

The big jump in capacity will come around 1960. Reason: Finsider's expansion program will mature then. (Finsider is a consolidation of the major Italian companies. It produces about 50 per cent of the nation's steel, about 80 per cent of its pig iron, and about 90 per cent of its iron ore.)

Finsider officials predict the group's steelmaking capacity will jump from about 4 million tons to nearly 6 million by 1961. By 1965, they expect Italy to make about 12 million tons of steel yearly.

Imported materials play a big part in Italy's steel industry, but German and Italian concerns are exploiting ore deposits in Portuguese India (Goa).

• **Brazil**—Brazilian steel expansion is slow. Shortage of capital is one of the big reasons. South Americans are sensitive about having too much U. S. money in their economy, and the governments tend to put restrictions on U. S. owned plants.

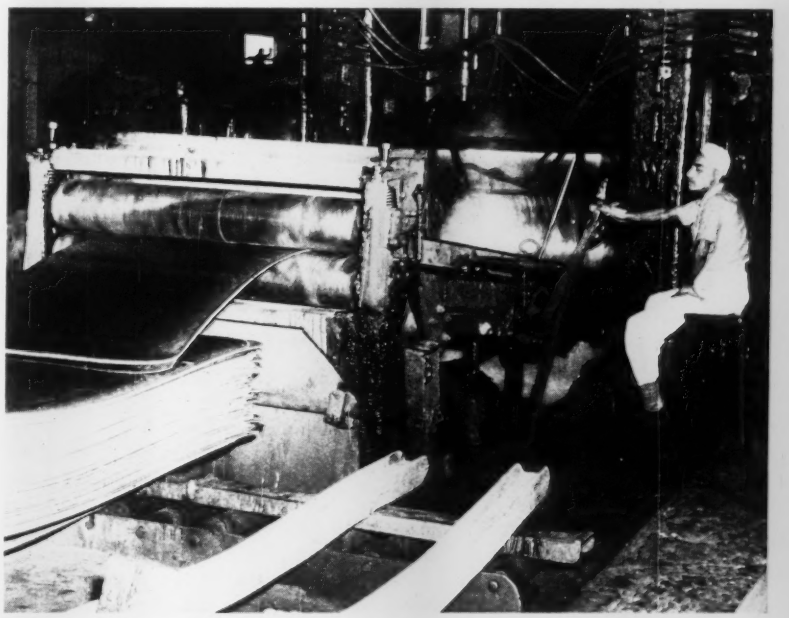
Krupp, a large German steel company, is pouring about $14 million into a foundry with a yearly production of about 18,000 tons of automotive parts. Annual production is expected to reach about 30,000 tons as the Brazilian auto industry expands.

Look for Brazil's industry to continue its slow climb but don't expect any startling advances. Steel production this year should hit about 1.75 million tons, vs. 1.6 million last year.

• **Latin America**—Mexico and the remainder of the Latin American countries are in much the same situation as Brazil. Expansion in Mexico, Argentina, and Venezuela will be slow but continuous. They will remain good export markets for U. S. producers.

• **Outlook**—Expect the world steel situation to improve (at least the Free World's) in correlation with the U. S. upswing. India will probably show the biggest gain (percentagewise). Argentina and Venezuela will show staggering percentage increases.

Barring emergencies, world capacity will continue its growth—nearing 400 million tons by 1970.



INDIA CONCENTRATES ON STEEL in her drive to industrialize. That nation expects to turn out nearly 2 million tons of steel this year. The nation has raw materials for large scale steelmaking. Friedrich Krupp, German steelmaker, has agreed to set up a steel plant in India, and the country is negotiating with British and Russian agencies for construction of two more plants

The Market Research Manager: A Composite Picture

HIS TITLE:

Market research director, market research manager, director of commercial research, and market development manager are common.

HIS RANK:

He has earned considerable status in recent years. He normally works in a staff position reporting to the vice president in charge of marketing. (Some MR directors report to the president, others to the general sales manager.)

HIS RESPONSIBILITIES:

He gathers, screens, analyzes, correlates, interprets, organizes information on which management decisions are based.

HIS FUNCTIONS:

He probably supervises 20 or more important operations (see right).

HIS TOOLS:

Many of them are highly scientific. Examples: Depth interviews, sampling, operations research, statistics, controlled audits, questionnaire techniques.

HIS PAY:

It will range from below $10,000 to more than $50,000 annually—depending on size of company, the importance of MR to the company, and the recognition given to the function.

HIS TRAITS:

He is imaginative, well read, a creative thinker, a clear analyst, a keen student of human relations, and a hard worker.

He Charts the Course to Profits . . .

AS THE GOOD navigator guides his ship through unfamiliar waters, so the present-day market research director must point his company down the channel of profit potential and avoid the rocks and shoals of risky ventures.

The MR director isn't a guesser. He's an addict of the scientific method.

He's gaining more importance every day—especially where competition is intense.

The new marketing concept has boosted his status, too. When company management asks: "How can we help our customers make their product more competitive in their market?" the MR man becomes a prized counselor. That kind of customer relationship necessitates "the four Cs of marketing—knowing your company, customers, competition, and costs," says R. C. Morrell, market research manager, Associated Spring Corp., Bristol, Conn.

• **Scope**—"My primary job is to determine the size of my industry's market, find my company's share of it, and initiate practices to enlarge that share," reports F. R. Widmer, director of commercial research, Republic Steel Corp., Cleveland.

• **Main Jobs**—That's a broad realm; it may include 20 or more separate functions. A STEEL survey found these to be most common:

- Spotting trends in market size and location.
- Finding territorial potentials.
- Analyzing sales records.
- Determining sales territories.
- Comparing competitive products.
- Studying new uses for products.
- Participating in new product development.
- Studying distribution methods and costs.
- Helping pick locations for plants, warehouses, and distributors.
- Sales forecasting.

• **Growing Jobs**—About half the researchers analyze performance of salesmen, advise on sales promotion policies and methods, help to evaluate new products, study other firms with an eye to mergers and acquisitions, and do research on packaging and style.

• **Sometime Jobs**—Some MR managers have these responsibilities: 1. Training salesmen. 2. Allocating advertising. 3. Developing sales techniques. 4. Assisting in pricing. 5. Finding defensework potentials. 6. Analyzing export markets. 7. Helping determine salesmen's compensation. 8. Evaluating sales inquiries.

• **Characteristics**—The kind of man who performs those functions must be "broad gage." He must have a working knowledge of all phases of his company's operations.

"He should be highly intelligent, amiable, persistent, and able to get to the core of a problem immediately," believes Richard T. Ozimek, supervisor of market research for Commercial Solvents Corp., New York.

"He must be able to make conclusive decisions useful to management," adds Louis K. Whitcomb, director of market research, Sharon Steel Corp., Sharon, Pa. "Ability to write and speak effectively is a necessary attribute," contends R. T.

Addis, director of packaging market research, Reynolds Metals Co., Richmond, Va.

Ralph L. Harding Jr., manager of commercial research for Allegheny Ludlum Steel Corp., believes a sound technical background is helpful. Donald Winpenny, manager of market research, Schick Inc., Lancaster, Pa., says a market researcher must "resist the common pressure to get the answer 'too soon—too easily.'"

"Experience in sales, advertising, promotion, and merchandising is helpful," reports N. B. Bagger, manager of marketing services, Fafnir Bearing Co., New Britain, Conn.

"Most important, the market research director must be able to judge whether a present product is profitable, or a new product might be," asserts Loring Philips, manager of commercial development, Blaw-Knox Co., Pittsburgh, Pa.

A point that has universal acceptance is made by Albert W. Chapple, manager of marketing research, Perkin-Elmer Corp., Norwalk, Conn.: Objectivity is of prime importance.

• **Habitat**—Where do you find such a man? He may come from line sales. Many have. Example: J. H. Glavin, assistant to the president for new product planning and market research, Haloid Xerox Inc., Rochester, N. Y.

He may have an engineering background as does S. E. Heymann, manager of market research, Signode Steel Strapping Co., Chicago.

Or he may come from any of a dozen other fields. Example: Before assuming his present position, Paul Ely, manager of market research, Bell & Howell Co., Chicago, was a buyer, research analyst, and investment manager.

The trend, especially among companies that have employed the marketing concept for a long time, is toward promoting a man from within the market research or sales forecasting departments into the top market research slot. Eugene G. Angers, senior market analyst, ACF Industries Inc., New York, came up that way.

• **Rewards**—"If you're looking for high pay and short hours, stay out of the market research field," advices Mr. Morrell. "But if you'd like to do mental gymnastics 24 hours a day, welcome of the fold."

Thumbnail Sketch of an MR Man

REGINALD C. MORRELL is market research manager of Associated Spring Corp., Bristol, Conn. He's a leading representative of his scientific profession.

He bears little resemblance to the market researcher of ten years ago. His approach is different; his tools are better; his functions have multiplied. He has gained considerable status. That's not surprising, since decisions that can mean the difference between profit and loss are made on the basis of data he collects and interprets.

• **TRAINING**—Mr. Morrell earned a B.S. degree from Bates College and has taken graduate courses in engineering and business administration at several other colleges and universities. For 13 years, he taught at Bristol High School where he became assistant director of technical education.

• **EXPERIENCE**—He joined ASC's Wallace Barnes Div. in 1940. After holding various line and staff positions, he became personnel manager, then market research manager of the firm's four Bristol divisions. In 1956, he was promoted to corporate market research manager and is responsible for MR in 11 operating divisions. He reports to the vice president of marketing.

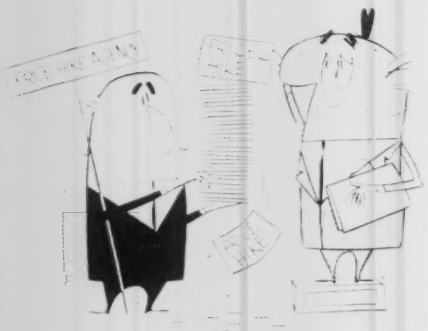
• **DUTIES**—Mr. Morrell's workweek often runs to 60 hours. He averages 9 hours a day in the office, supplements that with about 2 hours of business reading at home.

His primary responsibilities are in two fields—planning and operations. In planning, he is responsible for "long and short range studies and forecasts, policies, and procedures to promote marketing effectiveness and control." In operations, he provides divisional managers with information, advice, and assistance on MR, undertakes special corporate market studies, and advises corporate executives on marketing problems. He counsels division management on its marketing programs and interprets them in terms of corporate plans and policies. He also assists in analyzing sales and establishing and maintaining sales territories, quotas, and potentials.

• **DEFINITION**—Mr. Morrell says marketing research is "the fact finding, analytical phase of the distribution process. Its responsibility is to gather, record, and analyze information on any phase of distribution and to suggest conclusions resulting from these studies. It is a staff function—free and unhampered in the gathering of information—to give line executives unbiased analyses on which to base their decisions."

• **TARGET**—Mr. Morrell believes the greatest challenge to a market research manager in today's economy is to give management factual and meaningful analyses in the shortest possible time to help them make sound decisions.

• **OFF-THE-JOB**—Like many other MR men, Mr. Morrell is active in civic affairs. He is past president of the Connecticut State Exchange Clubs and a former Bristol city councilman. In 1952, he organized the American Clock & Watch Museum; he is now its vice president, director, and curator. A registered architect and pharmacist, he is also an antiquarian and historian.



Can Publicity Halt Inflation?

HOW would you like to be required to notify the Commerce Department of a price hike six months in advance?

That's the pet project of Sen. Joseph O'Mahoney (D., Wyo.), influential member of the Joint Economic Committee and an old warhorse on Capitol Hill in the battle against "big business." The law would apply to companies doing 50 per cent or more of their business in consumer products.

Senator O'Mahoney has promised to bring up such a bill next session and has fond hopes of finding new backers for the ten-year-old idea among freshmen congressmen. He is certain to get help from those who follow the lead of Sen. Estes Kefauver (D., Tenn.), chairman of the Antitrust & Monopoly Subcommittee. The Joint Economic Committee writes no legislation, but it is possible the bill could come out of Senator Kefauver's subcommittee, especially with weakened Republican membership. How it would fare with the whole Judiciary Committee is questionable because of the large conservative southern membership, but two replacements must be named for conservative Republican senators, Jenner (Ind.) and Watkins (Utah), who will not return.

Senator O'Mahoney believes the publicity gained from prenotification would work against price increases. Hearings would be held—although he is not asking for government power to stop price boosts. "Such publicity would be far more effective than civil or criminal prosecution under antitrust laws in preventing unwarranted price increases," he argues.

In his long campaign against "administered" prices, Senator Kefauver has yet to write any legislation. So Senator O'Mahoney's proposal should be appealing to him. He may be able to talk some moderates over to his view with the argument that public hearings on price hikes would be no more restraining on business than periodic Washington meetings of high level business and labor leaders.

Research Needs Lead to Mergers

The Senate Patents, Trademarks & Copyrights Subcommittee reports research needs play an increasingly important role in decisions to merge corporations. These factors may be involved: 1. To get direct control of patents. 2. To absorb technical and scientific personnel and gain research laboratories. 3. To diversify product lines. 4. To market a new product developed by a firm not capable of doing the marketing job itself.

Senator O'Mahoney heads this subcommittee of the Judiciary Committee. The report could be a tipoff to more extended efforts next session to help small firms do more research of their own or participate in the benefits of government research.

NATO Wants Plastic Weapons

Battlefield weapons, like some of the Army's new rocket launchers, bazookas, machine guns, and mines, will be plastic if some of the North Atlantic Treaty Organization countries that lack strategic materials have their way. We have highly classified projects going but not fast enough to suit some NATO members.

One of the chief advantages of a plastic weapon is its expendability. In Korea, retreating United Nations forces left weapons behind which the North Koreans and Chinese used or returned to scrap mills for remelting. A Russian breakthrough in Europe could present the same problem, planners fear. A reinforced plastic weapon can be put out of commission easily and can't be remelted.

Welfare-Pension Plan Forms Are Ready

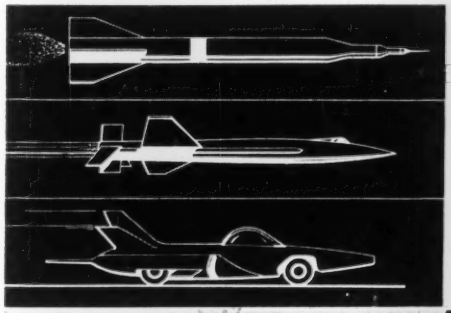
Contact your regional office of the Wage-Hour & Public Contracts Division, Labor Department, for forms needed to file your welfare and pension plans. Some firms must file two copies of their plans by Apr. 1—filing time is determined by when a company closes the fiscal year for its plans.

Ike Springs Budget Surprise

To balance his surprise budget of $77 billion for fiscal 1960, President Eisenhower is counting on higher revenues and the end of several temporary spending programs to offset record peacetime defense spending. He figures the business recovery will increase tax receipts, and he's asking for higher gasoline taxes and postal rates.

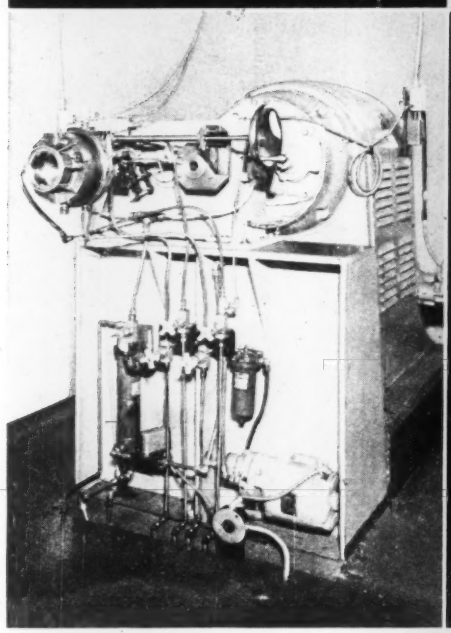
Capitol Notes

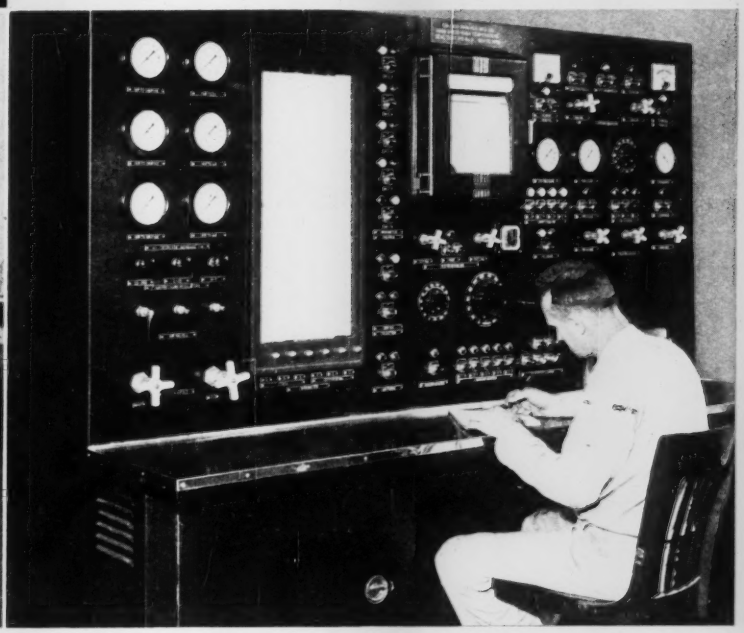
The Tariff Commission will not investigate the damage barbed wire imports are doing to U. S. manufacturers, but it is checking on imports of nails and wire fencing, as requested by four wire mills . . . Connecting channels on the St. Lawrence Seaway at Calumet Harbor and Menominee River will be deepened 2 ft by the Army Corps of Engineers . . . Truckers expect new requests by the railroads for legislation which will harm them . . . Watch for reports of two new missiles, the Navy's Eagle and the Air Force's Bold Orion.



Breakthrough

at 80,000 R.P.M.!





New C/R high-speed laboratories ...testing seals at tomorrow's speeds!

Pushing a design program through on schedule means that there can be no slow-down in any phase. If you know there's a high-speed sealing problem ahead — an accessory drive for a new jet, a hot, fast-rotating shaft in a guided missile, or a bearing in tomorrow's turbine car — plan for it now. Here in Chicago Rawhide's new High-Speed Seal Test Laboratory, C/R engineers now are breaking through present limits, evaluating the design and performance of advanced seal types such as end face, controlled gap, bellows, segmental and bore type seals under such punishing conditions as 80,000 R.P.M., –300° to +1000° F. and 500 psi. C/R is at your service *now* with the most advanced technology and facilities in the country for cooperative research on high-speed sealing problems.

Chicago Rawhide consistently gears itself to the future, ready to meet industry's new problems as they develop today. May we help you?

More automobiles, farm and industrial machines rely on C/R Oil Seals than on any similar sealing device.

CHICAGO RAWHIDE MANUFACTURING COMPANY
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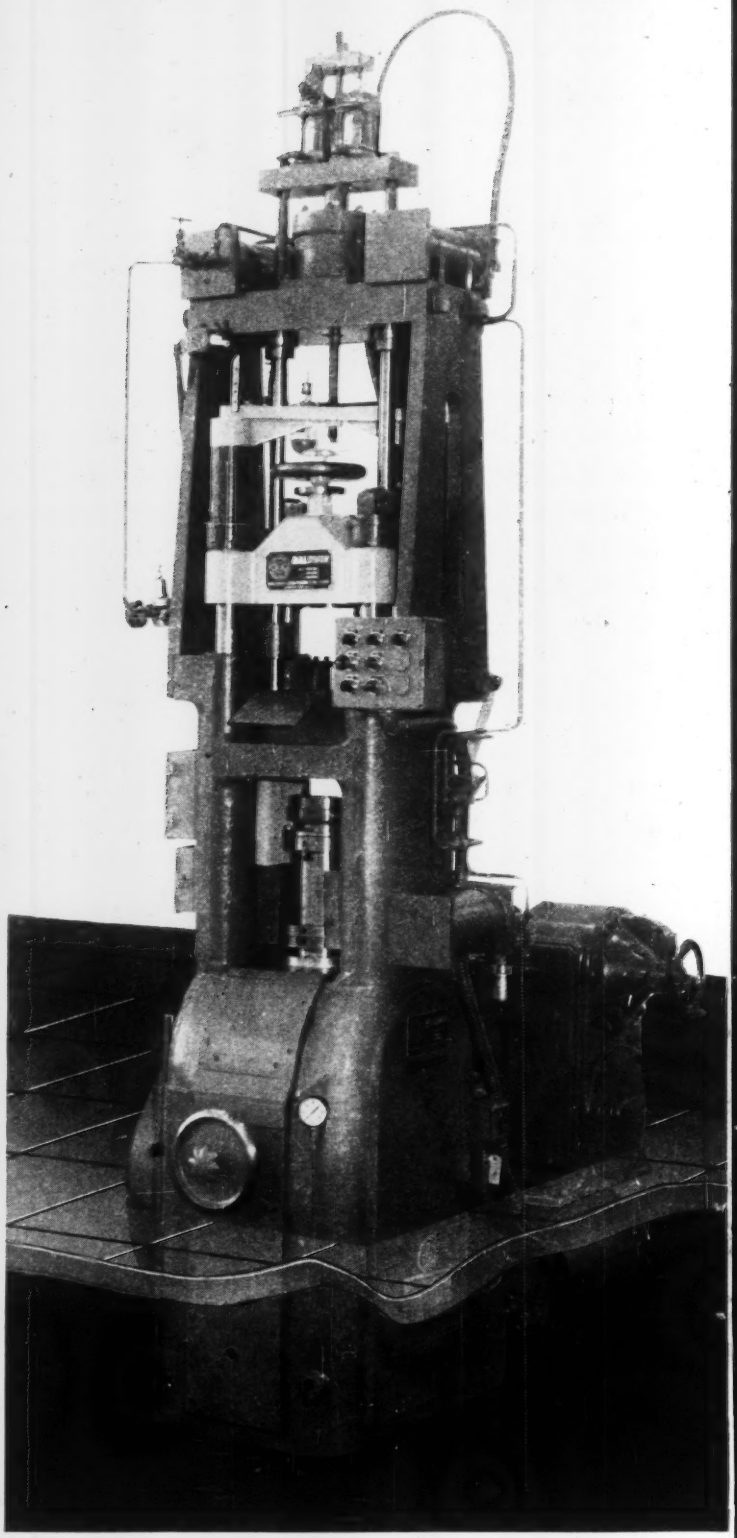
Offices in 55 principal cities. See your telephone book.
In Canada: Manufactured and Distributed by Chicago Rawhide Mfg. Co. of Canada, Ltd., Brantford, Ontario.
Export Sales: Geon International Corp., Great Neck, New York

C/R PRODUCTS: C/R Shaft and End Face Seals • Sirvene (synthetic rubber) molded pliable parts • Sirvis-Conpor mechanical leather cups, packings, boots • C/R Non-metallic Gears

OIL SEAL C/R DIVISION
CHICAGO RAWHIDE

New Baldwin compacting press eliminates raw material loss



Hamilton now offers the powdered metal industry a compacting press which is completely new in design and virtually eliminates the expense and contamination problem of powder loss of basic raw materials.

This 75-ton compacting machine will process such materials as powdered metals, ceramics, abrasives, carbides, cermets, ferrites, nuclear and other solid fuels for rockets and missiles with unprecedented speed and quality.

Another important advantage is that tools from Baldwin's famous 20-A compacting press are interchangeable with those of this new 75-A, and—with adapters—tools from other presses can also be used.

Write today to Dept. 1-M for complete information and application data

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BALDWIN · LIMA · HAMILTON

Diesel engines • Mechanical and hydraulic presses • Can making machinery • Machine tools & general machinery

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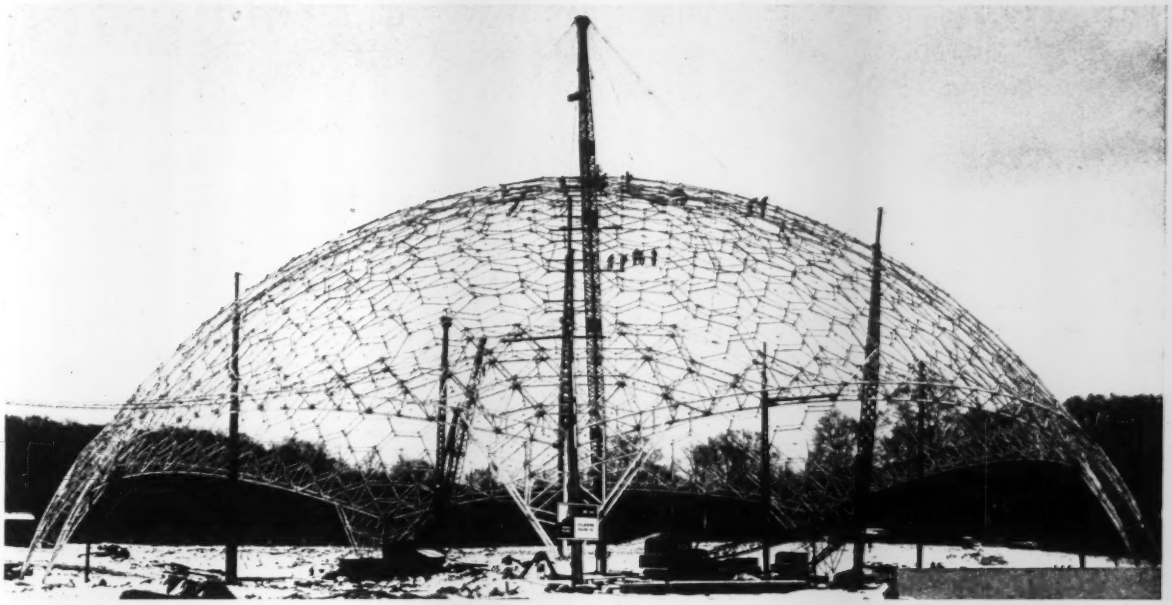


ASM landmark symbolizes man's mastery of metal resources

ASM Dome Goes Up in Ohio

IT TOOK just ten weeks to erect the huge aluminum honeycomb structure which serves as an elaborate landmark for the new headquarters of the American Society for Metals.

The world's largest openwork geodesic dome, completed Dec. 1, is east of Cleveland on State Route 87. Some 200,000 lb of aluminum rears up 103 ft from its five point, 250 ft base.

• **Greatest of Ease** — Components were first assembled on the ground. Sections were raised by cranes, then locked and bolted in position by steeplejacks hanging monkeylike to the dome. During erection, the sections were supported by temporary steel beams or by cables suspended from crane booms. Over-all precision of the weblike units permitted the high workers to lock them in place with ease.

The 50 ft center section was hoisted to the top by a 150 ft gin pole in just 45 minutes once the hitch and balance were perfected (lower right picture). The center section is a pentagon. The other units are 11 ft hexagons.

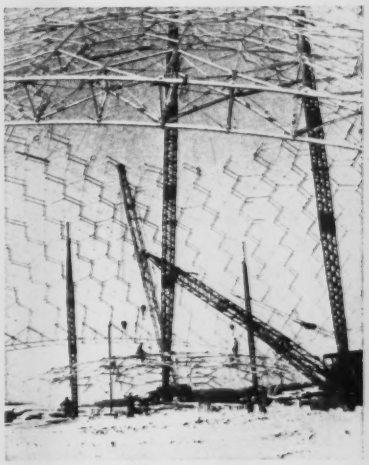
More than 65,000 pieces (5½ miles of tubing and 7½ miles of tension rods) went into the "space lattice" which is considered "the most imaginative structure to be built in the Cleveland area in the last decade." ASM officials say the quarter sphere is a symbol of the mastery by man of his metal resources.

• **Plan 1959 Move**—With the dome completed, construction of a three level, semicircular office building on the 100 acre site should proceed rapidly, says Dr. Clarence H. Lorig, technical director of Battelle Memorial Institute, Columbus, Ohio, and ASM president. Occupancy of the $2.4 million facility is looked for by the summer of 1959.

Generous applications of many metals for structural and ornamental uses will be features of the new building. Steel, stainless steel, copper, brass, bronze, as well as certain rare metals, are included.

R. Buckminster Fuller, president, Synergetics Inc., designed the umbrella-shaped structure in conjunction with John Terrence Kelly, Cleveland. Gillmore - Olson Co., Cleveland, has the building and engineering contract. Aluminum tubing produced by Kaiser Aluminum & Chemical Corp. was fabricated by North American Aviation Inc. Mak Construction Co., Cleveland, erected the dome.

Steel beams support the first 50 x 75 ft pylon



Assembled center section swings aloft

integrated CRUCIBLE steel service

Orders for specialty steels go out fast — usually overnight or even earlier — from *local* Crucible warehouses. That's because each warehouse has a wide variety of grades and sizes on hand, *at all times.*

gives you local stocks of 16,000 specialty steel items for immediate delivery

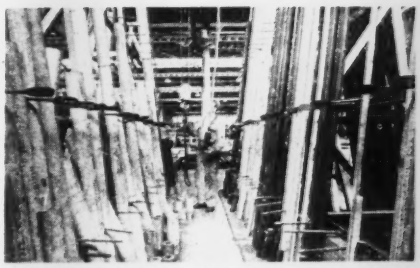
Within minutes, the Crucible inside account salesman can tell you if the grades, sizes and quantities you need are available. He'll check his customer's master file for your delivery requirements, billing details, etc. And then he'll quickly arrange for cutting to meet customer's requirements. So deliveries are swift and sure.

This combination of large local stocks and warehouse efficiency means you can fill even the most varied or unusual requisitions for specialty steels with a single phone call.

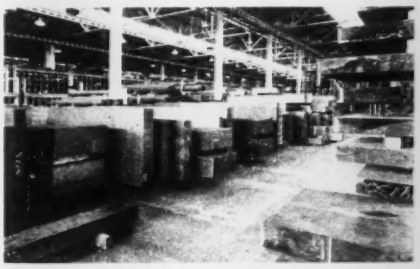
It's a basic reason why purchasing agents who *depend* on local sources call Crucible *first* – like this one:

"We're basically a tool and die 'job' shop. We never know what steel we'll be using from one day to the next. So whatever we need, we need fast. It has been our experience that it saves time to call the Crucible warehouse first."

Why not simplify and speed up your specialty steel purchases by relying on your local Crucible warehouse? The advantages of Crucible's entire integrated operation, from mining the ore to steelmaking and warehouse delivery, are all available through the nearby source. *Crucible Steel Company of America, Dept. PL15, The Oliver Building, Mellon Square, Pittsburgh 22, Pa.*

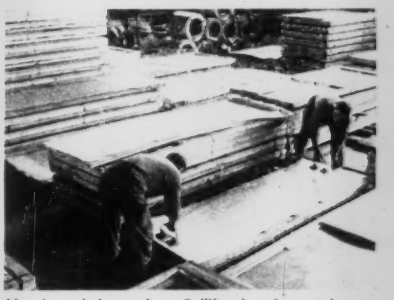


Local warehouse can fill both large and small orders from stocks like these of hollow tool steel sections and solid rounds.



Die casting die steels and plastic mold steels stand ready for cutting to order and immediate delivery.

Most Crucible warehouses stock stainless bars — stack them upright in "A" racks to protect the surfaces.



Need stainless sheet? The local warehouse stocks most types, finishes and sizes for prompt delivery to you.

TOOL STEELS—Water, oil, air hardening, shock-resisting, hot work, plastic mold and die casting steels in all forms, including bars, sheets, plates, drill rod, hollow bars, forgings and flat ground stock.

HIGH SPEED STEELS—Crucible's famous "Rex"® steels. Rex Thrift Finish rounds, hot rolled and cold drawn flats and squares, drill rod, forgings, sheets, plates, and tool bits.

STAINLESS STEELS — Bars, sheet, strip, wire, cold heading wire, metalizing wire, plates, angles.

FREE MACHINING STEELS — Crucible Max-el® rounds, hexagons, plates and brake die steel.

ALLOY STEELS — Bars, billets, strip and sheet.

COLD ROLLED CARBON SPRING STEELS

DRILL STEELS — Hollow and solid drill steels.

ALUMINUM EXTRUSION DIE STEELS

HOLLOW TOOL STEEL

WELDING AND HARD FACING ROD

PLASTIC MOLD STEELS

PERMANENT MAGNETS

— and many others

STOCK-LIST

Keeps you up-to-date on local stocks of specialty steels. Just ask the Crucible salesman to place your name on the regular mailing list.

One Source For All These Steels

CRUCIBLE STEEL COMPANY OF AMERICA

Branch Offices and Warehouses: Atlanta • Baltimore • Boston • Buffalo • Charlotte • Chicago • Cincinnati • Cleveland • Columbus • Dallas • Dayton Denver • Detroit • Grand Rapids • Harrison • Houston • Indianapolis • Kansas City • Los Angeles • Milwaukee • New Haven • New York Philadelphia • Pittsburgh • Portland, Ore. • Providence • Rockford • Salt Lake City • San Francisco • Seattle • Springfield, Mass. • St. Louis St. Paul • Syracuse • Tampa • Toledo • Toronto, Ont. • Tulsa

Osco Expands Again

Company buys division of Solar Steel, its second acquisition in Detroit this month

OSCO STEEL CO., Cleveland, has purchased a division of Solar Steel Corp., Detroit. The transaction covers Solar's Detroit warehouse inventory with the exception of flat rolled products.

It marks Osco's second acquisition this month. The company also obtained a former Murray Corp. of America warehouse at Detroit. It will spend $500,000 to remodel the 136,000 sq ft property.

Osco steel service centers also handle such nonferrous items as brass and aluminum. Owen Brock is general manager of the Detroit operation.

TRW Builds Coast Lab

Thompson Ramo Wooldridge Inc., has started construction of its $10.5 million Ramo-Wooldridge Laboratories, Canoga Park, Calif. The facility, on a 90 acre plot, will be the California research and development center for the firm.

AC Has New Missile System

AC Spark Plug Div., General Motors Corp., has developed an inertial guidance system about one-fifth the weight and size of the system it now produces for the Thor missile. The firm says a prototype has been made, and the system could be put into production within a year.

Team To Develop Missile

Three companies have formed an industrial team to complete development of a missile training target system for the Army. A practice missile is planned which would enable crews to practice and improve launching procedures and to test and improve electronic defensive systems.

The firms include Emerson Electric Mfg. Co., St. Louis, Aeronca Mfg. Co., Middletown, Ohio, and Experiment Inc., Richmond, Va.

Topp Sells Heli-Coil

Heli-Coil Corp., Danbury, Conn., subsidiary of Topp Industries Inc., Los Angeles, has been sold to an eastern group headed by W. C. Langley, New York.

Tubular Division Formed

Fabricated Steel Service Inc., North Hollywood, Calif., has formed a Tubular Div. to produce square and rectangular structural steel tubing. The company will specialize in unusual sizes. Tubing will be sold through western steel service centers and to mill buyers.

AEC Offered Powerplant

Philadelphia Electric Co., Philadelphia, and more than 40 other utility companies are offering to develop and build a high performance nuclear powerplant to provide economic electricity. Their action is in response to an Atomic Energy Commission invitation to industry to build a high temperature, gas cooled nuclear power facility.

GE To Close Jersey Plant

The air conditioning department of General Electric Co. will close its Bloomfield, N. J., plant Apr. 1. About 700 employees will be affected. The company will continue to make air conditioning products at Tyler, Tex., and Louisville.

Air Force Gives Contract

Gladding, McBean & Co., Los Angeles, received a $215,000 classified Air Force contract for development of a nose cone. High purity ceramic oxides will be used.

Hamilton To Change Name

Effective Jan. 1, 1959, Hamilton Mfg. Corp., Columbus, Ind., will change its name to Hamilton Cosco Inc. The firm manufactures "Cosco" brand step stools, seating equipment, furniture, and small housewares items.

Research Site Purchased

Lockheed Aircraft Corp.'s California Div. purchased a 198 acre site near Saugus, Calif., for a multi-million dollar research laboratory. The facility will be known as the Lockheed Research Center. Problems of flight up to ten times the speed of sound and at altitudes where man has never flown will be explored.

CONSOLIDATIONS

Chemetron Corp. has agreed to purchase the assets of **Cardox Corp.'s** carbon dioxide, chlorine dioxide, and fire equipment divisions. No personnel changes are planned by Chemetron. Chemetron will also acquire Cardox's interests in Dean-Cardox, Witt Ice, and General Carbonic.

Arco Equipment Corp., Bryan, Ohio, has acquired **Firewel Co. Inc.** Firewel will continue operations with no personnel changes.

Lewis Bolt & Nut Co., Minneapolis, has acquired **Lewis Marine Supplies Inc.**, St. Paul, and will do metal plating at the facility. The new name is Lewis Metal Plating, a division of Lewis Bolt & Nut Co.

Gerson-Stewart Corp., Cleveland, was purchased by Lewis R. Schilling. Gerson-Stewart is a supplier of cleaning compounds, sanitation chemicals, and floor preservatives for industrial, hospital, school, and commercial use.

Clonick Steel Co., Chicago, purchased **A. F. Anderson Iron Works**, Chicago. Miller Machinery Co., Detroit, was the seller.

Sundstrand Machine Tool Co., Rockford, Ill., has acquired manufacturing and sales rights to Hanson-Whitney Co.'s thread milling machines. Machines in the line will be manufactured at Sundstrand's plant at Belvidere, Ill.

American Can Co. has consolidated the operations of its two former subsidiaries, **Sun Tube Corp.** and **Bradley Container Corp.** Facilities will be operated by a newly formed Bradley-Sun Div. and will continue to manufacture and sell the same product lines. Kenneth M. Leghorn, former president of

Bradley, has been named vice president and general manager in charge of Bradley-Sun. Joseph D. Martin, previously president of Sun, was made vice president of the new division. Operations will continue at the former Bradley plant at Maynard, Mass., and the Sun Tube plants in New Jersey.

Pettibone Mulliken Corp., Chicago, has acquired **National Iron Co.**, Duluth, through an exchange of stock. National will continue to operate its Duluth plant under direction of its president, Lewis C. Erickson and Vice President Charles Eisenberg. Over 80 per cent of Pettibone Mulliken's production consists of material handling machinery for the construction, foundry, logging, road building, and mining industries. The balance consists of railroad track materials, manganese steel castings, and specialized equipment. National makes material handling and mine structure installations.

Yuba Consolidated Industries Inc., San Francisco, has purchased **Southwest Welding & Mfg. Co.** with plants in Alhambra and Richmond, Calif. Southwest has a complete service for the engineering, fabrication, and field construction of heavy equipment and is active in the fabrication and installation of large diameter pipe and penstocks in the electric power field.

Hammond Valve Corp., a subsidiary of **Consolidated Diesel Electric Corp.** acquired the business and assets of **Hammond Brass Works Inc.**, Hammond, Ind. Norman I. Schafler is president of Consolidated Diesel. Samuel Greenwald, president and chief executive officer of the predecessor company, will serve in the same capacity with Hammond Valve. Con Diesel manufactures power generators, test stands, electronic and data reduction equipment, electric motors and gearshift drives, missile and aircraft ground support equipment, as well as control systems and components for missiles, aircraft, and nuclear powerplants.

Hoover Ball & Bearing Co., Ann Arbor, Mich., has acquired **Strom Steel Ball Co.**, Erwin, Tenn., and **Coolidge Corp.**, Middletown, Ohio. Both companies will be operated as independent entities with no changes in management or business policy.

NEW PLANTS

Thomas & Betts Co., manufacturer of electrical fittings and connectors, is constructing a 92,000 sq ft addition to its plant at Elizabeth, N. J. Estimated cost: $750,000.

Kaiser Steel Corp.'s Fontana, Calif., plant has put a slabbing mill into production. The new facility is a major unit in Kaiser Steel's expansion program.

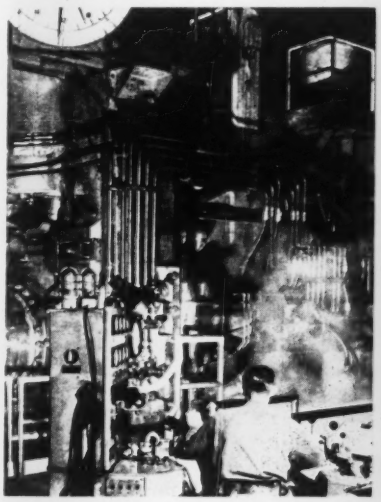
Allen-Bradley Co., Milwaukee, will erect an eight-story addition to its plant. The building will provide new receiving department facilities.

Bethlehem Steel Co. has completed a plant for the manufacture of ship propellers at its New York District shipyards. The plant has complete facilities for designing, patternmaking, casting, finish-machining, balancing, and installing propellers.

Techalloy Co. Inc., Rahns, Pa., is building a wire processing plant. The facilities are expected to be in operation by April, 1959.

Coles Cranes of Canada Ltd., a joint venture of International Equipment Co. Ltd., Montreal, and Steels Engineering Products Ltd., Sunderland, England, will open a new plant in January.

Convair Div., General Dynamics Corp., San Diego, Calif., is occupying a new hangar, office, and laboratory facility. The $2.5 million structure contains 46,709 sq ft of floor space.



THIS ROLLING MILL, reported as the first to be electronically controlled in the light metal industry, is operating at the Davenport, Iowa, works of Aluminum Co. of America. An automatic system follows instructions on IBM cards to establish mill speeds and roll openings. The machine operator completes the pass manually

ASSOCIATIONS

Arland R. Walkley, general manager, Manning, Maxwell & Moore Inc., Muskegon, Mich., was elected president of the **Electric Overhead Crane Institute Inc.**

Society of Automotive Engineers Inc. announced the election of Leonard Raymond, chief automotive engineer-research, Socony Mobil Oil Co., New York, as president.

John Bailey, Penn Paper & Stock Co., Washington, was re-elected chairman of the **Atlantic Div., National Association of Waste Material Dealers Inc.**

Karl A. Gardner, chief engineer, Griscom-Russell Co., Massillon, Ohio, was appointed to the executive committee of the **American Society of Mechanical Engineers, Heat Transfer Div.**

Mitchell Lipsett, Lipsett Steel Products Inc., Los Angeles, was re-elected president, **Southern California Chapter, Institute of Scrap Iron & Steel Inc.**

Richard Hare, Michael Schiavone & Sons Inc., New Haven, Conn., was elected president of the **Southern New England Chapter, Institute of Scrap Iron & Steel Inc.**

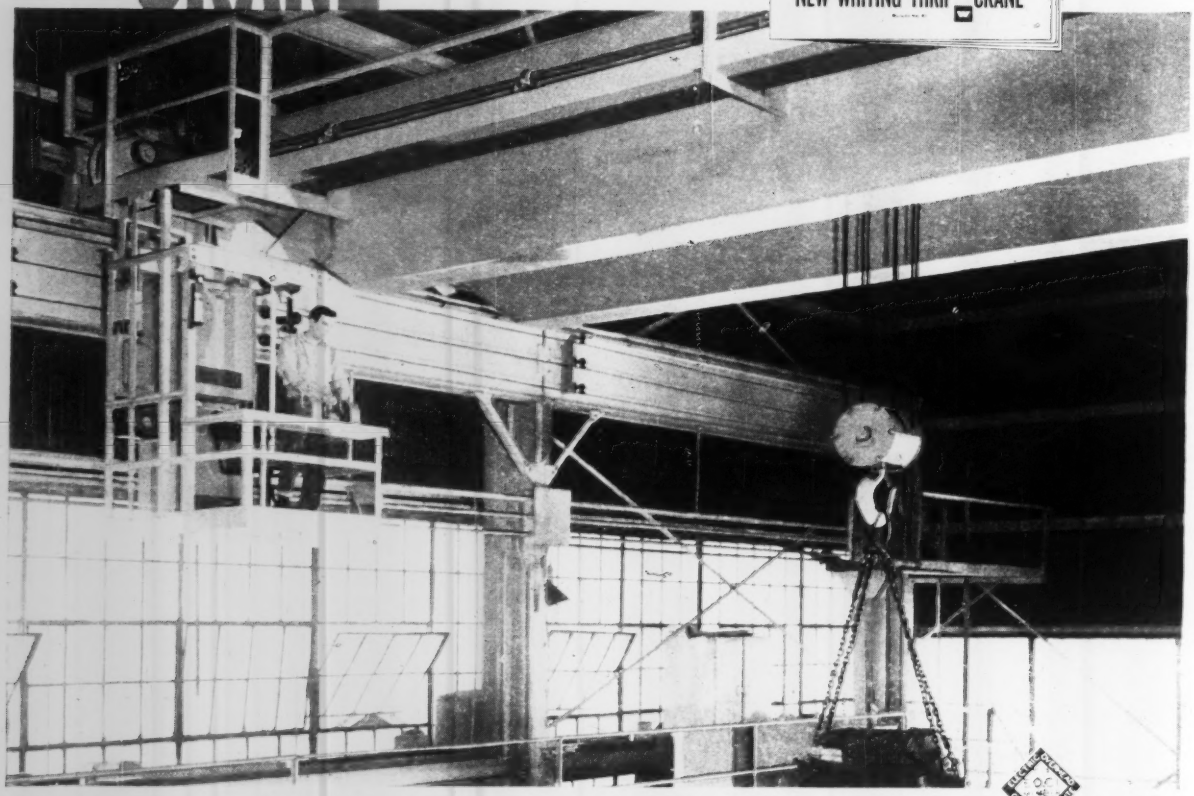
Lester Shapiro, Henry Shapiro & Co., Wilkes-Barre, Pa., was elected president of **National Federation of Independent Scrap Yard Dealers Inc.**, New York.

NEW THRIF-T CRANE

SEND FOR NEW BOOKLET
Bulletin 91 giving detailed information.

Keep your capital investment down

NEW WHITING THRIF-T CRANE



An Answer to Plant Modernization

Whiting's new Thrif-T Crane is slated to spark a trend in plant modernization. It's a husky crane. It has plenty of stamina to do big jobs with the speed demanded by today's production schedules and cost levels. *Yet, it costs much less than you'd expect!* Pre-engineering, mass-produced parts . . . and a host of exciting new design developments enable new Thrif-T Crane to provide big-crane performance at small-crane cost. *Whiting Corporation, 15643 Lathrop Avenue, Harvey, Illinois.*

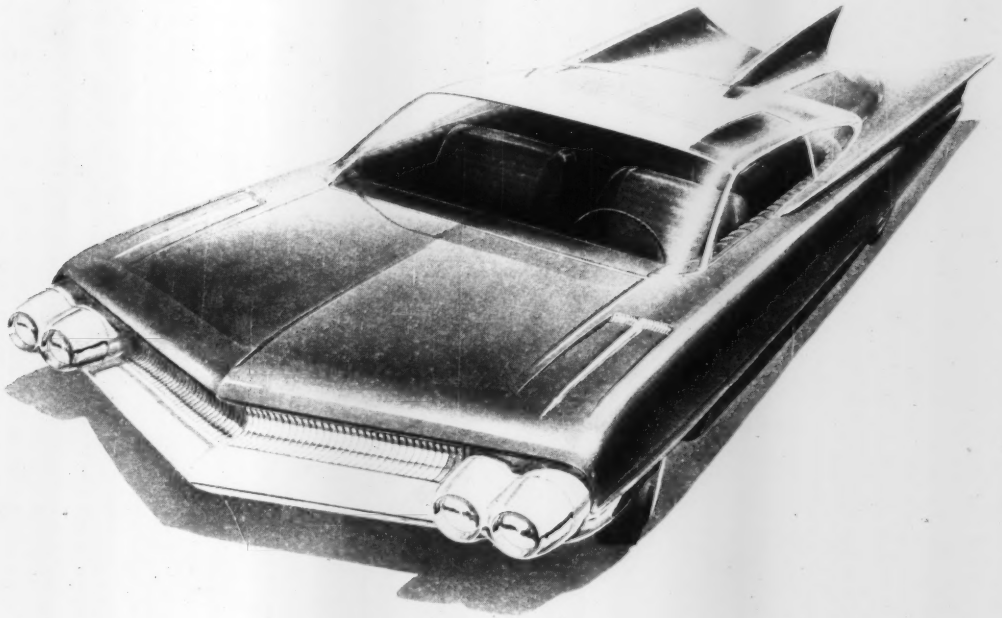
87 OF AMERICA'S "FIRST HUNDRED" CORPORATIONS ARE WHITING CUSTOMERS

75th year

WHITING

CRANES

MANUFACTURERS OF CRANES; TRAMBEAM HANDLING SYSTEMS; TRACKMOBILES; FOUNDRY, RAILROAD, AND CHEMICAL PROCESSING EQUIPMENT.



This Dream Car Is Contest Prize

DREAM cars always are intriguing. But you'll be particularly interested in the one pictured here. Reproductions of this car will be given to the ten runners-up in STEEL's Beat-the-Experts Contest which closes midnight, Wednesday (Dec. 31). The car was rendered for STEEL by George Walker, styling vice president, Ford Motor Co.

We've asked Mr. Walker how he visualizes it. "First of all, you want to remember that cars in the next ten years aren't going to be radical departures from what we have now. Let's say this is the kind of an automobile that could be built today," explains Mr. Walker.

Sketching swiftly on a pad, he continues: "I think this car, or any car for that matter, must give the impression of having aerodynamic movement. It has to look like it's ready to take off." Mr. Walker believes the way to achieve that is through clean lines. He asserts: "Styling should be refined, yet offer the crisp, sharp look of a blade of steel." This "crisp" effect is Mr. Walker's trademark in design circles.

• **It's For You** — Like Ford's Thunderbird, this dream car is a personal auto. "It seems to me that most executives like a car they can feel is theirs—it doesn't have to be shared with a lot of other people. Naturally, I'd expect them to have at least one other car for family use," he continues.

The car is 54½ in. high and has a 112 in. wheelbase. It's 200 in. in over-all length and has 14 in. wheels. Notice the louvered vents on either side of the center fin. That's for air flow through the engine compartment because this dream car is powered by a rear mounted lightweight engine.

"We added that center blade to give some relief to what otherwise might be too severe styling," Mr. Walker points out. He also thinks future cars will have clear tops. On this car, the greenhouse is mostly glass, but it has a flexible center strip of aluminum that can be rolled back to provide a semiconvertible effect. "The glass is tinted so the sun's rays won't heat up the interior," adds Mr. Walker.

• **Stylishly Functional** — He points to the vents on the front fenders. "The air intake vents are a styling highlight but also serve a functional purpose. Future cars will combine functionalism and style even more than we do today," he forecasts.

"Incidentally, we no longer refer to hoods and fenders. We're using the British terminology and calling the whole front end a bonnet," he adds. That's because future construction methods are likely to call

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for more unitization of body components, so fenders and hoods may be formed as single units.

The bumper is an aluminum stamping. Concave grille members are made from cold aluminum extrusions. Headlights are set in dual pods formed of heavy gage steel, so they'll double as bumper guards.

• **Similar Style**—Interior treatment on this car is similar to Mr. Walker's own personalized T-bird. An instrument cluster is mounted in a low pod located between two bucket seats in front. The steering wheel is a semiyoke type similar to those used on aircraft. "These are little items, but they add to this aerodynamic impression that auto designers are striving for today," proclaims Ford's styling chief.

• **You Name It**—"What have you named this car?" we asked Mr. Walker. He grinned. "Well, I suppose you could call it the Canaveral, but why don't you let your contest winners name it themselves. That will really make it a personal car for them."

If you want to win a reproduction of this dream car, your entry must be postmarked by midnight, Dec. 31. That's just two days away. You'll find entry blanks in recent issues of STEEL.

A Problem in Light Metals

Use of light metals in automobile engines and cooling systems will make for different corrosion problems, declares Leonard C. Rowe, staff research chemist, General Motors Research Laboratory.

Pitting and galvanic action are bound to be more prominent with aluminum than with gray iron or other ferrous metals. Antifreezes and rust inhibitors that prevent corrosion in present engines and cooling systems may not solve the problem in aluminum engines or radiators, explains Mr. Rowe. He believes the chemical industry must come up with new coolants or automakers will have to switch to some other method of cooling. GM's light car engine, now being built at Tonawanda, N. Y., is an air cooled job.

The GM chemist lists areas needing further research: 1. Effects of water quality on corrosion and inhibition. 2. Effects of heat transfer, surface boiling, and hot spots. 3. Effectiveness of inhibition in crevices and low velocity coolant areas. He adds that inadequate maintenance, re-use of antifreeze, and poor driving habits are other unknown factors that influence corrosion.

Turbine Engine Can Be Built

Automakers will be able to mass produce a gas turbine powered car by 1965 if they want to, thinks Prof. Frank L. Schwartz, University of Michigan. He claims reducing manufacturing costs and design of a chassis and body for a turbine powered car are the big drawbacks to its introduction.

Carbuilders agree that basic turbine development problems are pretty well licked. They say the biggest holdup is the heavy investment in piston engine manufacturing equipment. Turbine engines will be held in reserve as long as reciprocating powerplants can perform satisfactorily. No introduction is seen before 1970.

When it does appear, Professor Schwartz says it's likely to develop 200 hp and offer better fuel consumption than present day engines. To be fully competitive, the turbine engine must have a preheat exchanger to boost engine efficiency. Rotary heat exchangers offer most potential, although they call for leakproof, long life seals. At least one company reports it has developed seals that will outlast other turbine parts, says the professor.

U. S. Auto Output

	Passenger Only 1958	1957
January	489,357	641,591
February	392,112	570,650
March	357,049	578,356
April	316,503	548,656
May	349,474	531,413
June	337,355	500,266
July	321,053	495,625
August	180,324	525,363
September	130,426	283,862
October	261,696	327,362
November	514,099	578,600
11 Mo. Total	3,649,448	5,581,744
December		534,714
Total		6,115,458
Week Ended	**1958**	**1957**
Nov. 22	138,727	151,846
Nov. 29	123,088	114,795
Dec. 6	147,361	139,506
Dec. 13	137,882	145,503
Dec. 20	132,629†	140,447
Dec. 27	110,000*	79,945

Source: *Ward's Automotive Reports.* †Preliminary. *Estimated by STEEL.

Exhaust Notes

• DKW American Inc., New York, is a new subsidiary of Auto Union, GmbH, Duesseldorf, Germany. It will market the DKW car in the U. S. and Canada. DKWs come in two and four door sedans, a sports model, and a station wagon. The cars are equipped with a transmission-differential combination and are front wheel drive. They're powered by a 3 cylinder, two cycle engine. Price: Under $2000.

• Frederick Close, Alcoa vice president, says 42 million lb of aluminum has been used for decorative trim on 1958 model cars. That's an 8 million lb jump over 1957 although car output is 1.9 million units less.

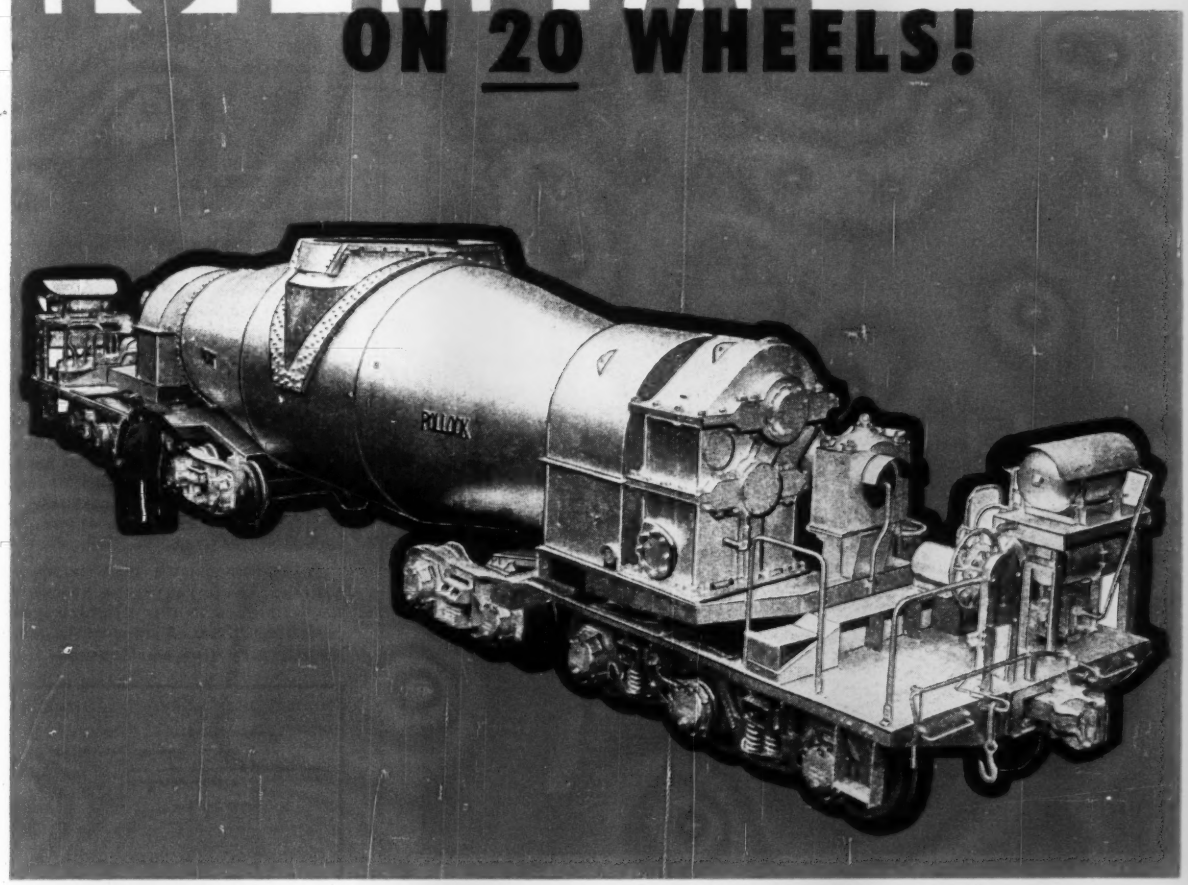
• U. S. Commerce Department estimates 56.9 million cars and 11.4 million trucks will be registered in the country this year. That compares with 1957 registrations of 55.9 million cars and 11.2 million trucks.

• Leece-Neville Co., Cleveland, predicts alternators that provide a constant flow of electricity will be standard equipment on all passenger cars by 1963. P. H. Neville, president, says standard generators can't meet the power demands of the increased number of electrical devices on today's cars. He predicts sales of alternators will double in volume next year from the current 3 million units.

• An intensive search is needed for high energy electrochemical power sources to supersede present lead-acid batteries, claims Dr. John J. Lander, director of electrochemical research, Delco-Remy Div., General Motors Corp., Anderson, Ind.

• AMT Corp., Birmingham, Mich., has introduced a self-contained power window lift that can be installed in less than an hour. The unit, for front windows only, is located over the window crank and mounted to the trim panel. AMT says it will market the device mainly through new car dealers. Price to dealers is $30.

HOT METAL ON 20 WHEELS!



another first by POLLOCK

THIS particular 20-wheel Pollock Hot Metal Car was built to meet the specific requirements of an eastern steel works plant layout. Pollock engineers designed this car with sufficiently reduced wheel loadings so as to transport 150 tons (an increase of more than 75 tons) across an existing old bridge with sharp curved approaches.

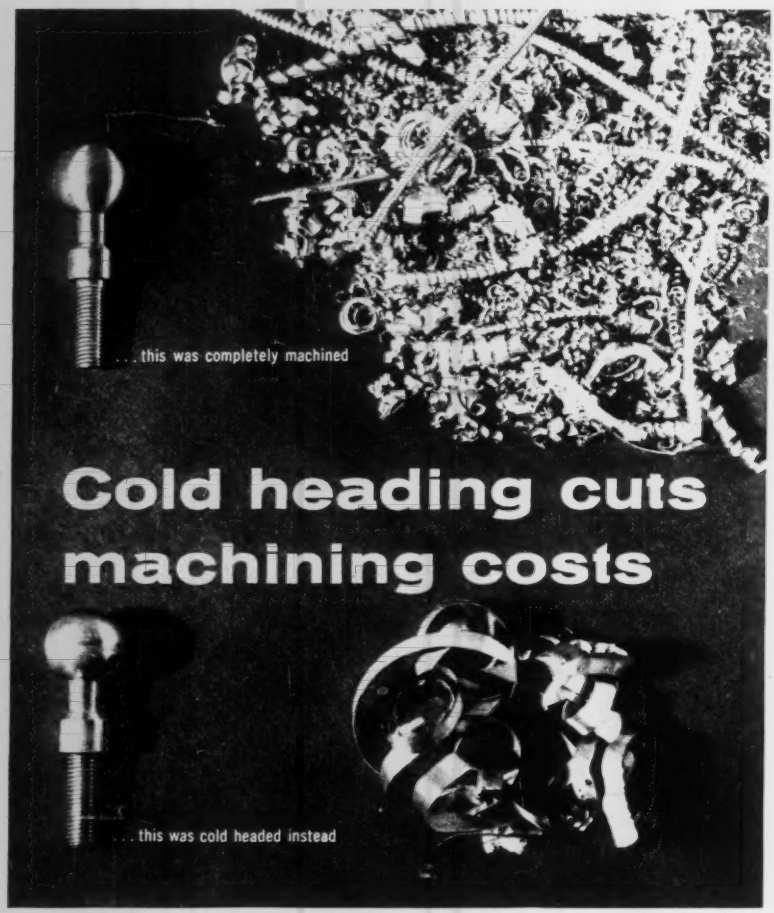
Lower operating costs start from the ground up. Pollock is singularly equipped to deal with all phases of hot metal car engineering and construction. The skill and knowledge of Pollock engineers as related to actual steel mill operating conditions are the keys to Pollock efficiency of operation.

Investigate this newest of hot metal cars . . . call Pollock today.

POLLOCK
SINCE 1863

THE WILLIAM B. POLLOCK COMPANY
YOUNGSTOWN, OHIO
Associated in Great Britain with Ashmore, Benson, Pease & Co.

ENGINEERS, FABRICATORS AND ERECTORS OF BLAST FURNACE STEEL WORK
. . . HOT METAL AND SLAG HANDLING EQUIPMENT FOR . . .
BLAST FURNACE, OPEN HEARTH AND ELECTRIC FURNACE PLANTS



- **Buy cold headed parts . . . produced with less scrap, in less time than machining**
- **You get stronger items, in one piece, at big savings**

Above you see an automotive part formerly machined, along with scrap turnings. Compare with the piece below—where metal has been forced to cold flow into shape in one of RB&W's cold heading machines. (That's the same equipment that produces RB&W bolts, thousands per hour, at rock bottom cost.)

It's obvious that cold headed parts save money. (Little or *no* scrap loss, faster production.) Not so apparent is the fact that the cold headed piece is actually *stronger*, too. The cold working does it. Also gives a better finish and oftentimes closer tolerances.

Cold headers used for fasteners can be adapted to almost any small parts now machined or forged as one or more pieces. That's where an expert can help you. Avail yourself of the RB&W Fastener Man to analyze your requirements. People who have already done so are profiting from RB&W's vast cold heading facilities and ability to supply large volumes at substantial savings. Russell, Burdsall & Ward Bolt and Nut Company.

R B & W
114th year

Plants at: Port Chester, N. Y.; Coraopolis, Pa.; Rock Falls, Ill.; Los Angeles, Calif. **Additional sales offices at:** Ardmore (Phila.), Pa.; Pittsburgh; Detroit; Chicago; Dallas; San Francisco. **Sales agents at:** Milwaukee; New Orleans; Denver; Fargo. **Distributors from coast to coast.**

Superior joints in heavy duty products

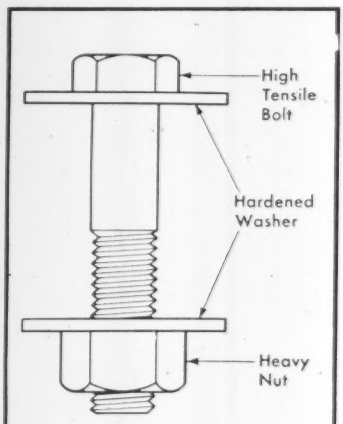
. . . achieved with RB&W High Strength Bolts

Plenty of experience now proves you can stop fastener failures with high strength bolts. Especially in products subjected to much vibration in service. Properly tightened, these bolts make the joints not only *permanently* tight, but *stronger*.

Here's why: A joint is only as strong as the *residual tension* left in fasteners after tightening. The more you tighten, the better it is.

RB&W High Strength Bolts allow a high level of tightening. Friction between bolted surfaces increases with the tightening, so that slippage of the joined members against each other can't take place. This makes the joint better able to resist external forces which try to shear or separate the joint.

In addition, with high residual tension, these fasteners are also more immune to the fatiguing and loosening effects of loads which constantly vary, such as vibration.

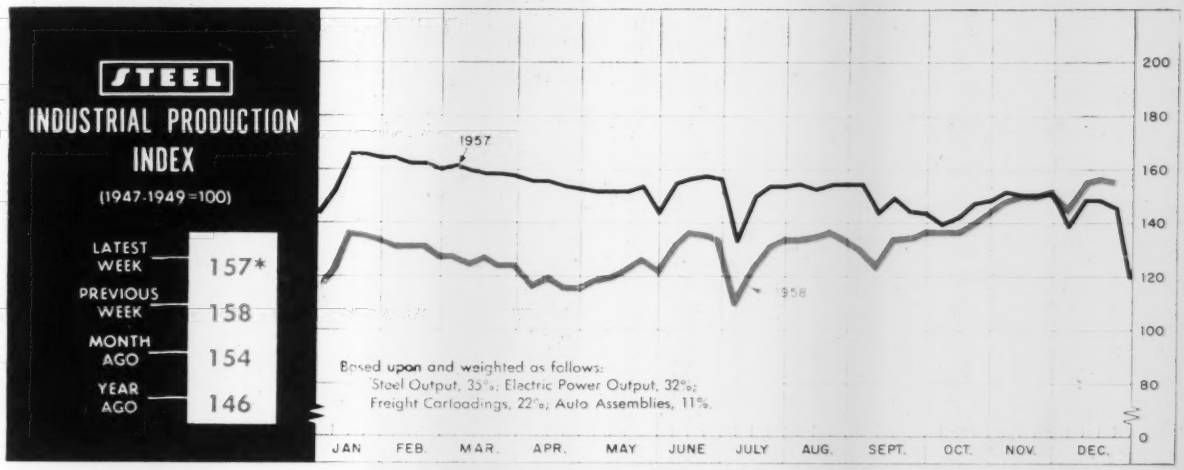


RB&W High Strength Bolts conform to ASTM A325. They're made of a selected grade of high carbon steel for proper balance of hardness and ductility. Use of hardened washers distributes their high clamping force over larger area.

As a result, one manufacturer of heavy duty shaker equipment has found them the only answer in troublesome joints which formerly required constant maintenance. Others are ending rivet failure and costly replacement in cranes, ore unloaders and freight cars with RB&W High Strength Bolts.

If you're making similar or related heavy duty equipment, talk it over with an RB&W Fastener Man.

RB&W FASTENERS—STRONG POINT OF ANY ASSEMBLY



*Week ended Dec. 20.

1959 Consensus: Good but Boomless

NEXT YEAR is one of the easiest to predict, claim the experts. If you've seen many of their forecasts, probably the only thing that has surprised you is their similarity.

Examples: Almost everyone is predicting a gross national product of $470 billion to $475 billion; an average FRB index rating of 146 to 148 (1947-49 = 100); steel output of 110 million tons; and new plant and equipment expenditures of $32 billion to $33 billion.

• **Possible Trouble Spot**—Extremists are few and far between. Of course, everyone is worried about inflation, but the only real pessimism uncovered by STEEL involves next year's labor problems. If the unrest in the automotive ranks during the fourth quarter is any indication, there will be plenty of trouble in 1959. It will upset the recovery schedule, say the gloomists, and could turn a moderately good year into a poor one. Optimists claim such problems would merely disturb timing. Once the strikes are settled, the upturn will gain speed.

• **Closer Examination**—The recovery in 1959 will be different from the upturns which followed the 1948-49 and 1953-54 recessions. It will be almost completely lacking in boom characteristics, mainly because little of the momentum will be supplied by the capital goods sector. Capacity in most manufacturing industries is sufficient to meet foreseeable demand until the 1960s.

Consumers will again be important, but the big dollar increases will come in nondurables and services rather than durables. And inventory buildup will account for a large part of the increase in GNP.

A comparison of some 1959 forecasts shows the similarity of economists' thinking and points up the general trends within the GNP. James Dawson, vice president and economist for the National City

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Production (1000 net tons)[2]	1,840[1]	2,011	1,366
Electric Power Distributed (million kw-hr)	13,400[1]	13,450	12,412
Bituminous Coal Output (1000 tons)	8,965[1]	8,625	9,171
Crude Oil Production (daily avg—1000 bbl)	7,050[1]	7,097	6,915
Construction Volume (*ENR*—millions)	$291.8	$353.3	$265.6
Auto, Truck Output, U. S., Canada (*Ward's*)	163,944[1]	170,405	171,433
TRADE			
Freight Carloadings (1000 cars)	580[1]	588	590
Business Failures (Dun & Bradstreet)	267	294	269
Currency in Circulation (millions)[3]	$32,394	$32,218	$31,973
Dept. Store Sales (changes from year ago)[4]	+3%	+7%	+2%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$25,589	$21,689	$25,004
Federal Gross Debt (billions)	$283.0	$282.9	$274.6
Bond Volume, NYSE (millions)	$34.9	$32.4	$27.3
Stocks Sales, NYSE (thousands of shares)	18,656	19,095	13,173
Loans and Investments (billions)[4]	$95.1	$94.9	$87.4
U. S. Govt. Obligations Held (billions)[4]	$31.9	$32.1	$25.6
PRICES			
STEEL's Finished Steel Price Index[5]	247.82	247.82	239.13
STEEL's Nonferrous Metal Price Index[6]	217.3	217.3	206.4
All Commodities[7]	119.1	119.0	118.2
Commodities Other than Farm & Foods[7]	127.1	127.0	125.8

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1958, 2,699,173; 1957, 2,559,490. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-39=100. [6]1926-39=100. [7]Bureau of Labor Statistics Index, 1947-49=100.

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Bronze Room
One of the brightest of the city's supper clubs. Dancing nightly from 9:00 p.m.
Air conditioned, of course.

Rib Room
A true specialty restaurant
For Fabulous Roast Beef, roasted, carved and served to your order

MEN'S BAR
Strictly stag — is this all male haven for good drinks, good food and good talk
Plus sports events on TV.

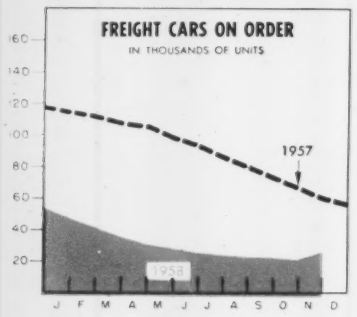
TRANSIT BAR
For *rapid* service in the most unique bar in the country decorated with an outstanding collection of miniature trains

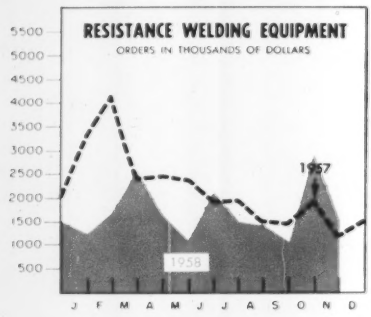
the PATIO
Pause — in the relaxing, informal atmosphere of the gayly decorated Patio. It's a Cleveland habit to say — "Meet me at the Patio."

Coffee Shop
Service is brisk and decor cheerful in the modern, air-conditioned coffee shop. Enjoy a tasty sandwich or a moderately priced meal.

HCA Hotel Cleveland
CLEVELAND, OHIO

THE BUSINESS TREND





	Awards		Backlogs (end of month)	
	1958	1957	1958	1957
Jan.	401	5,328	48,787	114,656
Feb.	294	6,065	43,750	111,965
Mar.	239	5,359	38,027	107,708
Apr.	278	6,429	32,908	105,190
May	1,372	3,423	30,386	97,906
June	317	4,918	27,757	91,810
July	376	1,251	25,994	85,229
Aug.	1,773	3,203	25,611	79,258
Sept.	1,582	3,257	24,982	71,981
Oct.	781	2,202	23,670	65,718
Nov.	6,295	1,070	27,962	59,194
Dec.	.....	3,492	.....	55,941
Total	.....	42,051		

American Railway Car Institute

	Net Orders		Shipments	
	1958	1957	1958	1957
Jan.	1,243	3,310	1,422	3,161
Feb.	1,683	4,161	1,615	2,386
Mar.	2,550	2,360	1,659	2,845
Apr.	1,684	2,429	1,963	3,111
May	1,121	2,310	1,750	2,891
June	2,113	1,936	2,346	2,735
July	1,534	1,943	2,342	3,194
Aug.	1,431	1,501	1,419	2,591
Sept.	1,060	1,463	1,125	2,528
Oct.	2,885	1,933	1,559	1,953
Nov.	1,561	1,167	1,130	2,227
Dec.	.....	1,501	.....	1,969
Totals	.....	26,014	.....	31,591

Resistance Welder Manufacturers' Assn.

Charts copyright, 1958, STEEL.

Bank of Cleveland, sees a GNP of $467 billion for next year. ("In matters like this you might as well say $470 billion.") Standard & Poor's says $470 billion. Mr. Dawson sees the annual rate reaching $475 billion in the fourth quarter. John J. Balles, assistant vice president of the Federal Reserve Board of Cleveland, sees the top rate in the same period at $480 billion.

• **Spending Up** — Personal consumption expenditures next year will jump to $305 billion (Dawson) or $306 billion (S&P). The rate in the fourth quarter will be $314 billion, says Mr. Balles, vs. $296 billion during the current quarter.

Gross private investment will range from $64 billion (Dawson) to $66 billion (S&P), compared with the 1958 estimated total of $53.5 billion. The big switch will be in inventories—from a liquidation of $5.4 billion this year to an accumulation of $2 billion to $3 billion in 1959.

Most economists point out that with the exception of inventories, this segment of the economy is operating at close to the anticipated 1959 rate, which indicates there will be little expansion in new construction and producers' equipment next year. Mr. Balles feels that maximum rate in the fourth quarter will be at or near the annual figure, further emphasizing the lack of zip in this area.

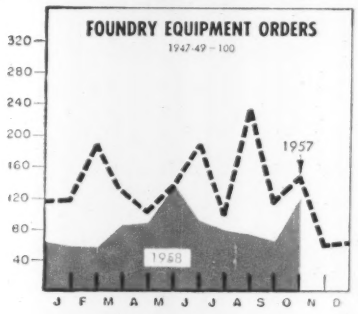
Net foreign investment (difference between export and imports) will remain at about the current rate of $500 million, but the Federal Reserve economist sees it dwindling to zero by the fourth quarter.

Government purchases will continue to expand the economy in the coming year, reaching $97.5 billion (Dawson) or $98.5 billion (S&P), with a rate of $101 billion coming in the fourth quarter (Balles). The increase in state and local spending will slightly outpace the rise in federal spending.

For a breakdown of the consensus forecast for 1959 by the industries and commodities, see the Metalworking Outlook in next week's Annual Yearbook and Planning Guide.

RR Car Orders Up Sharply

New orders have picked up in two of the hardest hit industries—freight cars and foundry equipment—but few officials are willing to say that the improvement heralds the beginning of a general upturn in their business.



	1958	1957	1956
Jan.	57.9	117.9	195.6
Feb.	57.6	188.4	169.0
Mar.	85.9	127.0	152.7
Apr.	88.7	101.1	135.2
May	136.1	136.2	207.0
June	87.7	187.5	156.7
July	77.9	98.6	110.3
Aug.	74.1	231.3	188.3
Sept.	61.5	113.9	111.7
Oct.	118.9	145.3	122.2
Nov.	....	59.6	121.0
Dec.	....	61.4	115.6
Avg	....	130.7	149.0

Foundry Equipment Mfrs. Assn.

	1958	1957	1956	1955
Jan.	93.07	126.34	122.43	97.00
Feb.	93.49	139.29	129.56	98.71
Mar.	97.89	140.76	166.14	119.16
Apr.	122.36	132.67	145.20	109.52
May	118.01	157.95	155.53	110.50
June	131.15	121.57	158.13	139.80
July	134.34	128.31	165.50	111.76
Aug.	103.46	110.09	168.70	106.20
Sept.	85.41	116.79	130.35	136.80
Oct.	111.35	124.80	143.38	123.52
Nov.	....	87.80	138.50	118.09
Dec.	....	105.65	117.76	139.85
Avg	....	124.34	147.68	120.01

Material Handling Institute Inc.

November orders of 6295 freight cars were the best since April, 1957, resulting in the first upturn in the backlog trend line in 30 months (see table and graph, Page 50). The figures are heartening, but officials point out that the big increase is accounted for mainly by two roads, the Louisville & Nashville and the Chicago, Elgin & Illinois, which ordered 3750 cars between them. The balance was small orders which are in line with the order pattern of the last year or so. Walter A. Renz, secretary-treasurer of the American Railway Car Institute, points out that the L&N triggered the last flurry of car buying. "We hope that history will repeat itself," he muses.

Officials of the institute feel that there is a feeling of optimism within the industry, but it can be traced to the general upturn in business rather than to the November report. The need for new cars is apparent. Over 400,000 cars in service are 30 or more years old. Industry officials say that a 10 per cent increase in carloadings would create a car shortage.

Western roads have been making more inquiries lately, according to some officials.

The Union Pacific doubled its original order for 100 rail-trailer flatcars. But the eastern roads are awaiting court clarification on this year's railroad act which set up funds for guaranteeing loans for capital expenditures.

Officials also point out that the backlog figure reported each month is inflated by the orders which the roads have had in their own shops for several years. Some of those units may never be built.

Foundry Buying Rises

The foundry equipment industry is gaining strength. A sudden advance pushed new orders from the lowest point in seven months to a level almost 50 per cent above the 1958 average (see table and graph above). But members of the Foundry Equipment Manufacturers Association are not going overboard.

C. R. Heller, secretary-treasurer of the association, believes the jump resulted from an accumulation of orders held up by the recession. There is no major buildup in the industry, he says, and even October's index figure is nothing to shout about. Although all major types of foundry equipment contributed to the upturn, industry officials are cautious about the future.

.010 to .001 25" wide; down to .00015 in narrower widths.

All regular commercial tempers.

Commercial bright anneal finish.

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Coils or cut lengths, both with #3 edge.

302, 305, 321, 347, 430, 17-7PH, PH15-7MO plus various high temperature alloys and rare metals.

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FAMOUS FALLACIES *about industrial advertising*

Advertising leaves less money for profits

J. H. Jewell refutes this one . . .

Mr. J. H. Jewell, vice president in charge of marketing, Westinghouse Electric Company, says: "*Well-planned industrial advertising is a cause — never just a result — of sales and profits. In today's economy the quality of communications in selling is as important as the quality of production equipment.*"

Progressive managements realize they must make effective use of all the channels of communicating with markets — salesmen, publication advertising, direct mail, trade shows, catalogs, films — if enough products are to be sold to insure full-scale employment and full use of production facilities.

Advertising has been proven to be the lowest-cost way of making up people's minds. It reaches more people, more often, with *carefully-controlled* messages.

When salesmen call on people who have been preconditioned by advertising, their task is easier, their own efforts more effective.

That is why more and better industrial advertising leads to a greater share of market preference — and greater profits.

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An organization of over 4000 members engaged in the advertising and marketing of industrial products, with local chapters in ALBANY, BALTIMORE, BOSTON, BUFFALO, CHICAGO, CLEVELAND, COLUMBUS, DALLAS-FORT WORTH, DENVER, DETROIT, HAMILTON, ONT., HARTFORD, HOUSTON, INDIANAPOLIS, LOS ANGELES, MILWAUKEE, MINNEAPOLIS-ST. PAUL, MONTREAL, QUE., NEWARK, NEW YORK, PHILADELPHIA, PITTSBURGH, PORTLAND, ROCHESTER, ROCKFORD, ST. LOUIS, SAN FRANCISCO, TORONTO, ONT., TULSA, YOUNGSTOWN.

ROBERT D. EVERETT
National Malleable works supt.

WILLIAM E. VOGEL
Atlas Drop Forge plant mgr.

ARCHIE L. SPRATT
Metal Forming research-eng.

RALPH W. OLMSTEAD
president of Ferguson Co.

Robert D. Everett was made general superintendent of the Melrose Park, Ill., Works of **National Malleable & Steel Castings Co.**, Cleveland. He succeeds **Carlisle Slater**, recently made manager of the Melrose Park Works. Mr. Everett was finishing department superintendent in the company's Sharon, Pa., Works.

Youngstown Sheet & Tube Co., Youngstown, elected four vice presidents, effective Jan. 1. **Robert P. Bremner** was made vice president-raw materials, a new post; **Donald S. Day**, vice president-traffic; **Dr. Karl L. Fetter**, vice president-research and development, a new post; **J. D. Sloan**, vice president-purchasing. Messrs. Sloan and Day replace **William E. Fowler**, vice president in charge of both traffic and purchasing, who retired recently. Mr. Bremner was assistant vice president, and was in charge of mining properties.

Dan E. Baker was named marketing manager, **Atlas E-E Corp.**, Woburn, Mass. He was manager of advertising and sales promotion for Judson L. Thomson Mfg. Co.

Albert E. Edwards was elected a vice president, **W. L. Maxson Corp.**, New York. He was vice president-manufacture at Ford Instrument Co., division of Sperry Rand Corp.

Charles H. Farrington was named production manager; **M. I. Jurras**, industrial relations manager of **Royal McBee Corp.**'s new portable typewriter plant under construction in Springfield, Mo.

William E. Vogel was appointed plant manager of **Atlas Drop Forge Co.**, Lansing, Mich., subsidiary of Dana Corp. Former assistant plant manager, he succeeds **C. G. Ryan**, who was appointed vice president-sales at Atlas.

Archie L. Spratt was made director of research and engineering for **Metal Forming Corp.**, Elkhart, Ind., a division of Vanadium-Alloys Steel Co., effective Feb. 1. Mr. Spratt is currently a metallurgical engineer in the customer service department at Vanadium-Alloys' main office in Latrobe, Pa.

Thomas F. Scannell was appointed vice president and general sales manager, **Falk Corp.**, Milwaukee. He has been general sales manager since 1943.

R. H. Wilson was appointed assistant manager, foundry division, **American Hoist & Derrick Co.**, St. Paul. He was recently Chicago district manager for Electro Metallurgical Co.

Lucian J. Courtney Jr. was named manager-sales service for Duff-Norton Co.'s **Coffing Hoist Div.** in Danville, Ill. He succeeds **A. M. Kelly**, who was made district sales manager in San Francisco.

Glenn S. Park was appointed chief development engineer for the body and hoist division of **Heil Co.**, Milwaukee.

Max Chilton was made representative for Australia by **McKay Machine Co.**, Youngstown.

Ralph W. Olmstead was elected president, **H. K. Ferguson Co.**, Cleveland. He succeeds **Wells N. Thompson**, who was elected vice chairman. Mr. Olmstead was named executive vice president early in 1958.

L. L. Dodge was elected vice president-administration; **C. C. Dybvig**, vice president-sales for **Dana Corp.**, Toledo, Ohio. Mr. Dodge was assistant general sales manager. Mr. Dybvig joined Dana in 1954 as general sales manager.

James F. Donnelly Sr. was made general manager of **A. O. Smith Corp.**'s new reinforced plastics division. He was assistant to the executive vice president, and formerly was assistant general manager of the corporation's Permaglas Div. at Kankakee, Ill.

Arthur H. Woodward was appointed manager of the Miami, Fla., sales district of **Kaiser Aluminum & Chemical Sales Inc.** He succeeds **Ray Piantanida**, appointed western regional manager, electrical conductor division.

Paul Boesen was made chief service engineer by **W. O. Barnes Co. Inc.**, Detroit.

Armour & Co., coated abrasives division, Alliance, Ohio, named **Benjamin M. Miller** manufacturing superintendent.

International Minerals & Chemical Corp., Skokie, Ill., appointed **H. Turner Loehr** director of engineering; **Lawrence A. Roe**, director of devel-

DANIEL B. McAFEE

ROBERT MAHAN

A. H. Wirz Inc. vice presidents

HARRY MATTHIESON

JOSEPH J. SHIEL

executive posts at Arwood Precision Casting

opment; **Walter L. Hardy**, manager of chemical research.

A. H. Wirz Inc., Chester, Pa., elected **Daniel B. McAfee** vice president-sales; **Robert Mahan**, vice president-operations. Mr. McAfee was New England district manager, plastics and resins division, American Cyanamid Co. Mr. Mahan most recently was vice president-general manager of Wirz's Carrollton, Ky., plant.

Herman W. Steinkraus, chairman of **Bridgeport Brass Co.**, Bridgeport, Conn., released his responsibilities as chief executive officer and general manager of the company to **Austin R. Zender**, who became president last April. Mr. Steinkraus, president for 16 years and chairman for the last 12 years, continues as chairman.

Allis-Chalmers Mfg. Co. named **J. T. Petersen** manager of petroleum and chemical sales, New York district; and **T. L. Dineen**, manager of metal industry sales in the Cleveland district, succeeding Mr. Petersen.

Douglas E. Kellogg was appointed sales manager, **Foredom Electric Co. Inc.**, Bethel, Conn.

Spencer H. Bellue was appointed assistant to the vice president of Hughes Products, **Hughes Aircraft Co.**, Culver City, Calif.

Clayton L. Heintz joined the valve and fitting division, **Cooper Alloy Corp.**, Hillside, N. J., as salesman

William O. Blandford was named assistant to the merchandising manager, mechanical goods division, **Dayton Rubber Co.**, Dayton, Ohio.

Harry Matthieson was named to the new post of vice president of process engineering at **Arwood Precision Casting Corp.**, New York. He was plant manager at the Brooklyn plant, and is succeeded by **Joseph J. Shiel**, formerly assistant plant manager.

Thomas W. Mitchell fills the new post of general manager of warehouse operations at **Wm. G. Wetherall Inc.**, Baltimore. He has been one of the firm's Baltimore sales representatives, and will continue for a while to service some of his accounts.

Terry W. Kuhn, executive vice president, was elected president, **Bohn Aluminum & Brass Corp.**, Detroit. He succeeds **Simon D. Den Uyl**, now chairman. **Richard C. Aylward**, general sales manager, was elected vice president-sales. **H. Blake Thomas**, general manager of the Betz Div. at Danville, Ill., was elected vice president, and continues responsibilities with that division.

Joseph H. Girdler was named manager, West Virginia Works, Huntington, W. Va., **Connors Steel Div.**, H. K. Porter Company Inc. He succeeds **Astor L. Thurman**, resigned. Mr. Girdler was assistant to the division vice president.

John H. Smith was appointed vice president-manufacturing, **Yard-Man Inc.**, Jackson, Mich.

G. Basil Davies was named Los Angeles district sales manager, **National Steel Corp.** Transferring from the Indianapolis office, he succeeds the late **James E. Allen.**

E. H. Schanzlin joined **Tuthill Pump Co.**, Chicago, as chief engineer. He was assistant to the director of engineering, Pesco Products Div., Borg-Warner Corp.

Nat Currier was made manager of the Detroit district office, **Ross Heat**

TERRY W. KUHN

RICHARD C. AYLWARD

H. BLAKE THOMAS

executive changes at Bohn Aluminum & Brass

Exchanger Div., American Radiator & Standard Sanitary Corp.

John R. Anderson was appointed manager of the material handling division of **Heppenstall Co.**, New Brighton, Pa. He was made assistant general manager last May.

Don R. Proctor was made chief engineer of **Electronic Engineering Co. of California**, Santa Ana, Calif. Formerly assistant chief engineer, he succeeds **L. S. Preston**, resigned.

L. S. Preston joined the technical staff, Astrovehicles Laboratory, **Space Technology Laboratories Inc.**, Los Angeles, subsidiary of Thompson Ramo Wooldridge Inc. He was chief engineer at Electronic Engineering Co. of California.

Richard N. Schuck was made director of a newly formed marketing research department within the marketing division of **Consolidated Electrodynamics Corp.**, Pasadena, Calif. He has been a management consultant with McKinsey & Co. Inc. for the last two and one-half years, and previously was manager of marketing research at General Metals Corp.

Mitchell P. Kartalia, manager of **Square D Co.'s** marketing division, Detroit, was elected a vice president.

Wolverine Tube Div., Calumet & Hecla Inc. appointed new district sales managers as follows: **Richard B. Flynn**, Cleveland; **Carl T. Fuller**, Chicago; **Philip MacKay**, Philadelphia; **George W. Overstreet**, Dallas; **Edmund J. Campbell**, Detroit; **T. F. Vigmostad**, St. Louis; **Richard C. Cash**, Birmingham. **Fred F. Moore** remains as sales manager, New York district.

Bethlehem Pacific Coast Steel Corp. announces retirement of **C. H. Beattie** as general manager of the Seattle steel plant, and promotion to that post of **W. J. Bolton**, former assistant general manager.

Bennie Silvestain was elected treasurer of **Empire Steel Corp.**, steel warehouse in Denver. In STEEL, Dec. 15, p. 110, it was incorrectly stated that Mr. Silvestain was with Empire Steel Corp. (now Empire-Reeves Steel Corp.) at Mansfield, Ohio.

JOHN R. ANDERSON
Heppenstall division mgr.

DON R. PROCTOR
Electronic Eng. chief eng.

L. S. PRESTON
joins Space Tech. Lab

RICHARD N. SCHUCK
Consolidated Electrodynamics

R. E. HOWARD
Davey Compressor post

CLARENCE A. WISKOFSKE
Republic plant supt.

R. E. Howard, former comptroller, was appointed manager, contracts administration department, **Davey Compressor Co.**, Kent, Ohio. He will direct processing of large unit orders from the sales department, through engineering and production to customers. **Gordon W. Schroedel** succeeds Mr. Howard as comptroller. He was vice president-finance at Ric-Wil Inc.

Denver L. Hykes, former assistant superintendent, was promoted to superintendent at the Lynchburg, Va., plant of **E. J. Lavino & Co.** He is succeeded by **Herbert E. Fredrickson.**

Joseph M. Till was named production control manager, Montebello, Calif., plant of **Western Design**, a division of U. S. Industries Inc. He was production control and purchasing manager for Talley Corp.

Francis E. Holland was made sales manager, Butterfield Divisions, **Union Twist Drill Co.**, at Derby Line, Vt., and Rock Island, Que. He was assistant sales manager.

At the Massillon, Ohio, steel plant of **Republic Steel Corp.**, **Clarence A. Wiskofske** was named superintendent of the open hearth department, succeeding the late **Arch Swier. Robert A. Bechtold** succeeds Mr. Wiskofske as assistant superintendent, openhearth department.

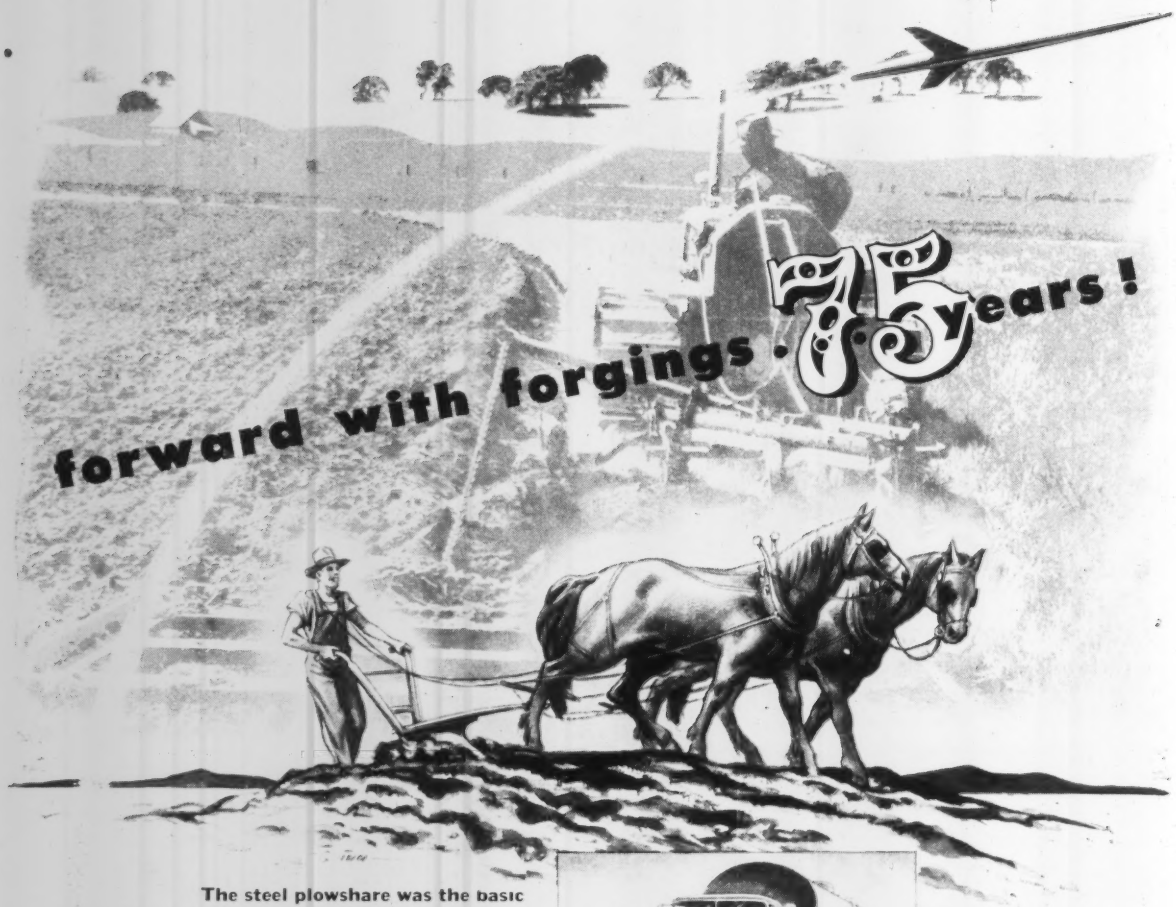
OBITUARIES...

C. Vincent Chapin, 62, purchasing agent for **Bristol Brass Corp.**, Bristol, Conn., died Dec. 13.

C. William Derhammer, 70, founder and president, **Lakeside Steel Improvement Co.**, Cleveland, died Dec. 17.

Allen K. Crabill, 58, superintendent of the Lynchburg, Va., blast furnace plant, **E. J. Lavino & Co.**, died Dec. 14.

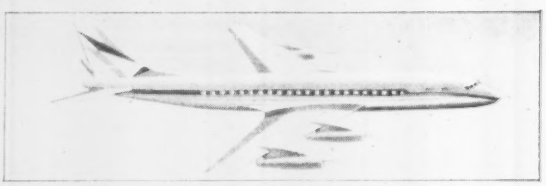
Laurence Atkinson, president and general manager, **Frost Steel & Wire Co. Ltd.**, Hamilton, Ont., died Dec. 11.



The steel plowshare was the basic agricultural tool when Wyman-Gordon was established seventy-five years ago. At that time, it took approximately 50 per cent of the nation's work force on farms to produce food for our country's needs.

With today's mechanical farm implements, it requires only 12½ per cent to feed our people. The development of modern farm implements, motor cars, trucks and tractors, railroad locomotives, and the "Mach era" aircraft and space vehicles, would have been impossible without forgings.

Whenever the ultimate is required in power, speed, endurance or reliability there is no substitute for a forging. Today, as for seventy-five years, Wyman-Gordon continues in the forefront in new forging developments.



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HARVEY, ILLINOIS • DETROIT, MICHIGAN

RIVET WELDS, RUSSIAN STYLE— Joining of girders and trusses can be mechanized with a kind of welding that uses coated electrodes to form rivets or plugs. Developed by a Russian, here's how it works: The electrode is mounted in a device that looks like a drill press. A doughnut shaped copper dam keeps molten metal in line as the electrode melts its way through the plates. Three ½ in. plates and a ¼ in. electrode at 850 amperes produce a rivet plug that will take a 12 ton load.

CHEMICAL ORE REFINING— Chlorine at 4500 to 6000° F offers an economical way to get chromium, aluminum, titanium, zirconium, and other metals out of their ores, says Salem-Brosius Inc., Carnegie, Pa. It is operating a pilot plant in partnership with Diamond Alkali Co., Cleveland. Output: 500 lb a day.

DURABLE YELLOW— A special combination of nickel oxide and titanium dioxide makes a durable, light fast, chemically resistant yellow pigment. The maker, Harshaw Chemical Co., Cleveland, says the yellow doesn't fade even at 1000° F.

DETECTING FATIGUE— Ultrasonics will predict early fatigue in aluminum, says Franklin Institute, Philadelphia. Its study for the Air Force turned up data for detecting dislocations in internal structure.

HOW PARTICLES HARDEN— Alloy strength depends on tiny particles dispersed throughout a metal, says General Electric Research Laboratory, Schenectady, N. Y. The laboratory has been studying them with a novel magnetic method that determines size, shape, and number. Some of the particles contain only a few thousand atoms. Results show that there is a critical particle size, and that all characteristics change during deformation. Researchers hope to throw light on the mechanism of hardening, come up with harder alloys.

HELP FOR COMPLEX ID PROFILES— Hollow cylindrical stock, like tubing, is slipped over a shaped mandrel. Repeated squeezes on the outside diameter reproduce the mandrel shape on the inside diameter. Called Intraform, the machine that does the job is built by Cincinnati Milling Machine Co.'s Meta-Dynamics Div., Cincinnati. Tolerances on finished parts are said to be excellent.

QUADRUPLES FORGING DIE LIFE— To eliminate scaling, add some lithium carbonate powder to the gas stream of your heat treating furnace, say three Germans who found the method cut decarburization and increased forging die life. Other advantages: No adhesion of loose scale to the hearth, pickling either eliminated or greatly shortened, easier machining.

MORE DIRECT REDUCTION— A steelmaking method called the Madrigal process is about to go into production in a new southern California plant. Finely ground iron ore is beneficiated, mixed with a patented compound (probably a chemical reducing agent), and briquetted. The material is charged into gas, induction, or arc furnaces.

KINGSIZE HONEYCOMB— A 6 by 12 ft stainless steel honeycomb panel has been fabricated by Rohr Aircraft Corp., Chula Vista, Calif. Made to test feasibility, it is hailed as a major advance. The techniques picked up during development are expected to lead to even bigger applications. Components like wells, cutouts, and see-throughs are built in.

JET-SPEED RIVETING— Every 3½ seconds, an automatic machine drills, countersinks, and counterbores a hole, inserts a rivet, squeezes it, and shaves off the head. Four of the machines, built by Nuclear Products-Erco Div., ACF Industries, are helping fabricate Convair's 880 and 600 jetliners.

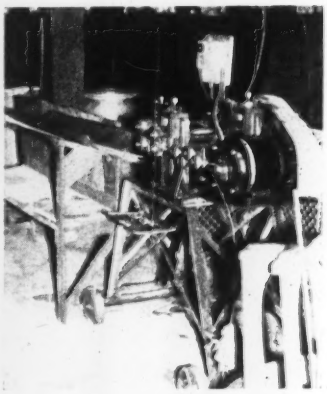
Metalworking Outlook—Page 19 Market Outlook—Page 75

How We Beat the Cost Crisis

The Job: Weave Crimped Wire Cloth

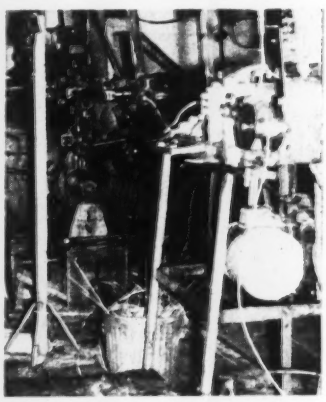
Integrated Machines Lift Productivity 75 Per Cent

OLD METHOD



Crimp the wires . . .

NEW METHOD

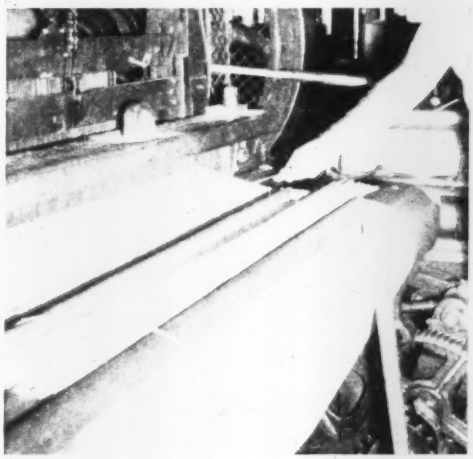


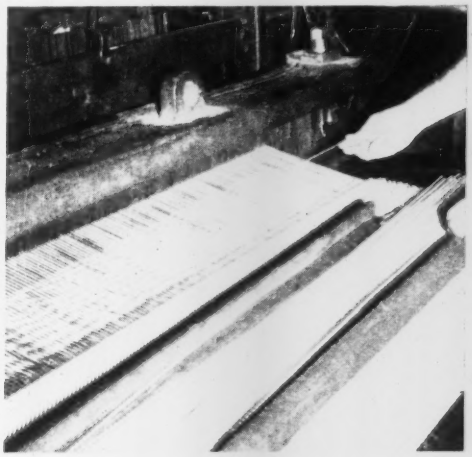
Crimp the wires . . .

This is the last of the top entries in STEEL's 1958 Cost Crisis Awards Competition. (We started to publish the outstanding entries in the July 7 issue.) A committee of 100 readers will choose the ten Award winners. Watch for the results of the judging

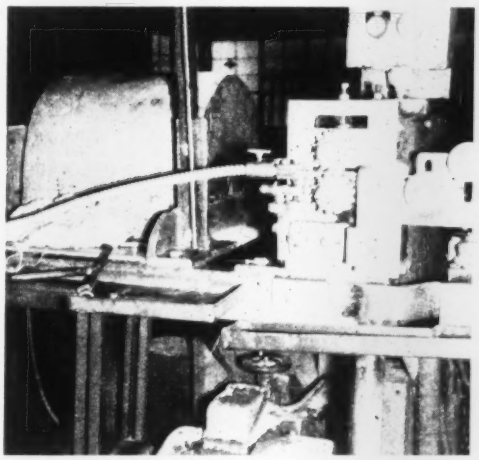
ONE man does the job that used to require two at the Cambridge Wire Cloth Co., Cambridge, Md. His job: Shepherd two machines—one that crimps wires, another that weaves them. The feed of both machines is automatic; so is the transfer of wires between them.

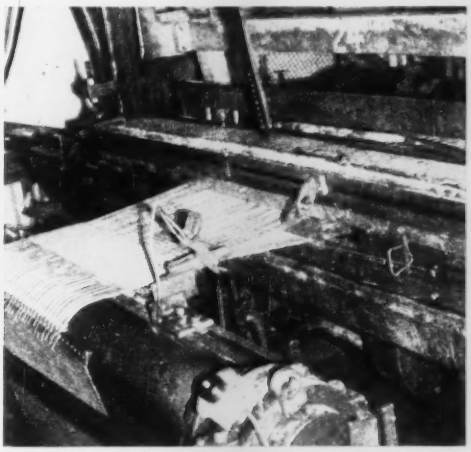
The operation is a far cry from what it used to be. One man ran





Carry wires to the loom and hand-feed them





Automatic transfer to loom and automatic loom feed

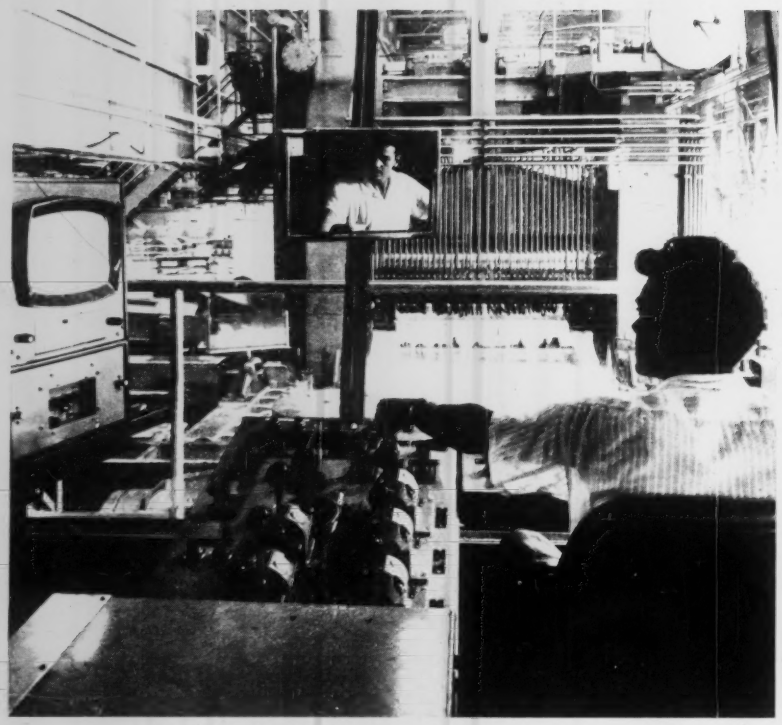
the crimper and carried crimped wires to a second operator who inserted them into the loom by hand.

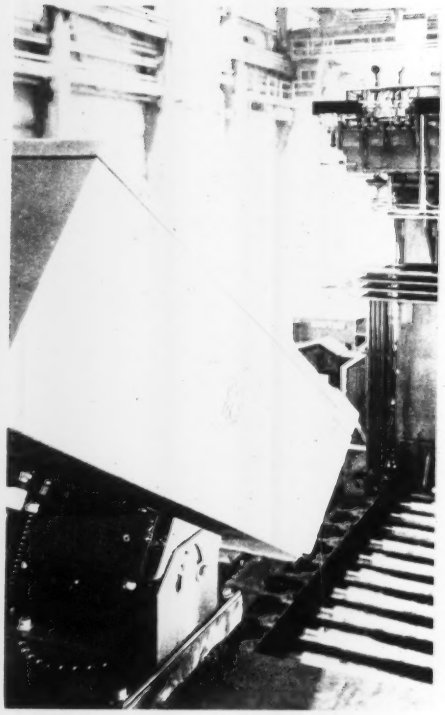
Henry Murphy, plant engineer, tells STEEL that all the engineering for the changeover was done by company engineers. First, the two machines were tied together with a transfer system that moves the wires to the loom. Second, the engineers developed a loom feed that inserts the wires faster than the operation could be done by hand.

Since the finer wires lack rigidity, they are inherently difficult to feed properly. The automatic feed makes it possible to go to finer wire—essentially adding to the product range.

The wire crimper is activated by microswitches on the loom, so the timing of the two machines is coordinated. An electric clutch and brake on the crimper controls the length of the crimped wires.

Direct labor reduction equals 50 per cent, but because the automated sequence is faster, line productivity is boosted by as much as 75 per cent on some jobs.





Slab enters mill, operator looks at television screen . . . watches slab

Electrical 'Firsts' Update

Closed circuit television, electronic and automatic controls help this modern plant to get greater output, higher quality. Saving in manufacturing time, floor space also realized

YOU can get a good idea of what can be done with a well engineered electrical system by taking a look at Kaiser's aluminum plant at Ravenswood, W. Va. It features several "firsts" developed through the combined engineering efforts of Kaiser Aluminum & Chemical Corp. and General Electric Co.

The system includes one of the largest battery charging units ever built by GE—providing 56 circuits and 300 kw of charging power—and 35 adjustable-voltage Speed Variator drives for a scalper, three blanking presses, and the strip and foil processing lines.

Automatic gage control equipment operates both screwdowns on the cold strip mill, regulates speed and reel tension on the foil mill. With closed circuit television, operators can see the front and back of the hot and cold strip mills.

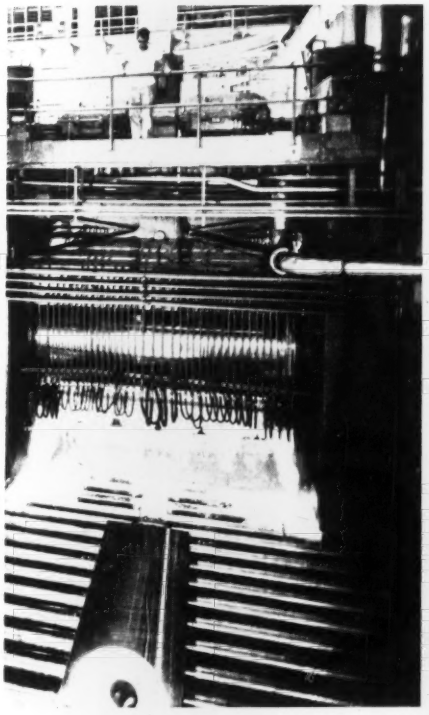
Pumpless rectifiers save space on two of the potlines, where the ore is refined.

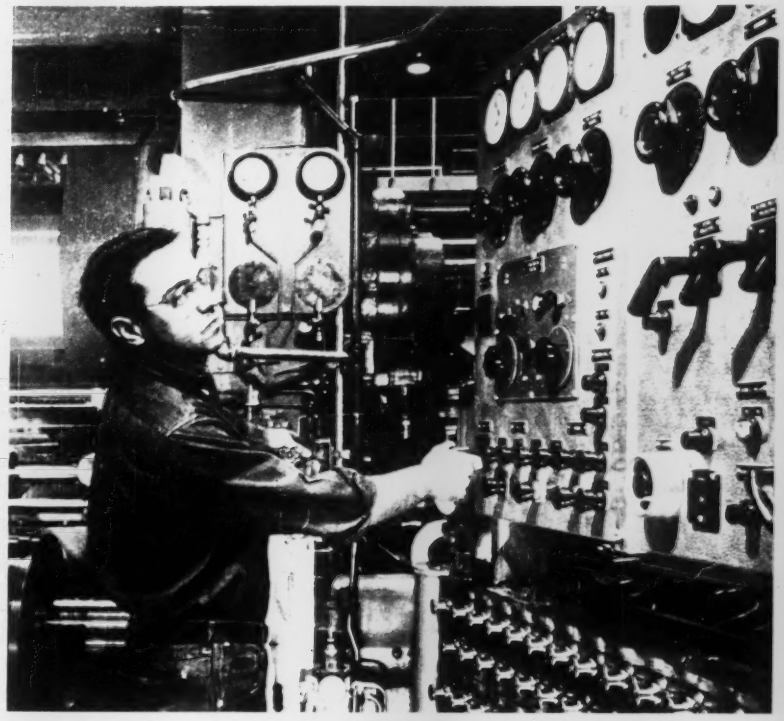
• **Modernize Hot Mill**—An individual stand, power supply system is used on the 100 in. strip mill; adjustable voltage drives, totaling 26,000 hp, include a co-ordinated system of motor-generator sets for the five stands.

Stand and reel controls are co-ordinated by a system of the type used in tandem cold mills. All stand screwdowns can be operated from a common switch with descending speeds from the entry to the delivery end of the mill; gage changes can be distributed to all stands.

Low inertia, double armature motors respond quickly to individual stand regulating controls. Series armature circuit loops simplify load division.

A co-ordinated stop and reverse jog feature minimizes the aluminum scrapped on each cobble; several automatic threading, stopping,





leaving far side . . . automatic controls regulate speed, reel tension in foil mill

Aluminum Plant

and unloading features are built into the reels.

Automatic adjustment of stand speeds takes up slack at the start of a coil, holds tension arms in a fixed position during a run, and increases tension for gage correction as the strip leaves the stand.

• **Cold Strip Mill Updated**—Controls on the 2 stand, cold strip mill are like those on the 5 stand hot mill, except that conventional cold mill type reel controls are used.

Screwdowns for each stand of the 72 in. mill are operated by automatic gage control equipment; x-ray gages are placed behind each stand. It is the first use of such equipment on two screwdowns in the same mill, GE engineers say.

Compensation applied through the gage control system helps maintain proper gage as the mill is accelerated. High speed mill reversal permits transfer of strip back to the unwind reel if it has been wound on the rewind reel by mistake.

• **Automatic Foil Mill**—An automatic gage control system regulates the speed and reel tension in the 72 in. foil mill. Coil buildup rheostats on the unwind and rewind reels of the single stand mill allow presetting of controls for desired coil diameter, provide improved tension control.

• **TV's Hottest Show** — Operators in air conditioned pulpits roll ingots at 1175° F, weighing up to 12,000 lb, with 110 and 168 in. reversing mills. The 4 high mills are operated with electronic and automatic controls.

With closed circuit television, operators can see when each slab has passed through the mill and is ready for the return pass.

Mirrors, previously used for the "see around" process, often clouded and gave inverse images. Vibration made frequent adjustment necessary, and the mirrors required more light than the TV system (only two 150-watt spotlights are used with each camera). The two television circuits have required no repair in six months of continuous operation.

• **Space Saver**—Each of the four potlines, in which ore is refined electrolytically, consumes about 60,000 kw—accounting for most of the 300,000 kw demand expected when the plant is in full production.

On two of the potlines, Kaiser uses pumpless rectifiers (they're sealed, but can be opened for service or repair). Because vacuum pumps, headers, and connections are eliminated, rectifier tanks are arranged in tiers to save space.

You Can Reduce Costs by——

Eliminating duplication of parts.
Giving purchasing agent choice of suppliers.
Helping engineer choose parts for new designs.
Correlating quality with job requirements.

Standards Rout Duplication

STANDARDIZATION can help you simplify purchasing procedures, control quality of parts purchased for given uses, and wipe out duplication.

That's what it did for the Grinding Machine Div., Norton Co., Worcester, Mass. Forest H. Bump, Norton standards engineer, says that by standardizing ball bearing specifications, his company eliminated duplications in purchasing records, purchase orders, and storage space.

The number of bearing types kept on hand was reduced from 500 to 400, and more of each type were stocked. By using less expensive bearings where possible without lowering product quality, Norton saves more than $3700 a year. Mr. Bump told the National Standards Conference, American Standards Association, New York.

• **Old System Confusing**—Prior to 1953, Norton had little control over the use of ball and thrust bearings. Engineers bought bearings of any make, grade, type, or size, often duplicating dimensions and grades already in stock under as many as three different venders' names. They were not cost conscious, and bought the best bearings they could get, regardless of job requirements.

• **Standards for Purchasing**—In setting up the standards system, Norton assigned a number to each bearing used on its regular line of equipment. Listed under each number were venders who normally manufacture that bearing.

The purchasing department was given authority to buy requested standard bearings from any approved vender. Before the standard was issued, the buyer was forced to buy each bearing from the specified vender regardless of price or delivery date. If that part could not be obtained, the buyer had to contact the engineer for a substitution. In one such case, it was found that a suitable bearing was already in stock under another vender's name.

• **Standards for Engineers** — A standards sheet also helps the engineer select the bearings he needs without referring to a vender's catalog. In addition to part numbers, the engineer's sheet includes size and other pertinent data, such as mounting type, preload, accuracy or grade, and type of lubrication. Also included: A list of rules for engineers to follow in standardizing bearings for new uses.

• **Other Savings**—For one application, Norton had been buying thrust bearings, disassembling them, then regrinding and relapping race and thrust surfaces to closer tolerances. That procedure was costly, because Norton had little of the equipment and knowhow to make bearings. Three manufacturers were contacted for quotations on the bearing built to Norton specifications. Norton saved $2000 on the first lot of 64 obtained.

Titanium Is at Home In Heat Exchangers

Its corrosion resistance and heat transfer properties make it ideal for that use

YOU CAN lower maintenance costs on heat exchangers by using titanium tubing and placing the units inside the tanks they're to heat or cool. The approach eliminates external pumps and piping.

Here are two case studies:

• **Case No. 1** — Keuhne Chemical Co., Elizabeth, N. J., saved $1500 in maintenance costs the first year it used welded titanium tubing in a heat exchanger for a chlorinating process. Tubing for the unit was fabricated by Alloy Tube Div., Carpenter Steel Co., Union, N. J.

The new heat exchanger is in the processing vat; the cost of maintaining an external pumping system is eliminated.

In the separate cooling unit previously used, replacement of broken glass tubing cost over $300 per year, and shutdown time averaged 10 to 12 hours a month. Three or four men left other work to do each repair job. When cooling water contaminated the sodium hypochlorate solution, extra processing was required to remove the contaminant.

Titanium tubing has been in use almost two years. No tubes have failed.

• **Costs No More To Build**—The 2 in. tubing costs no more than glass, and the heat exchanger is designed to save fabrication costs.

The tubing is held in place by plastic end plates and rubber gaskets. An externally threaded nut holds each gasket against a shoulder, squeezing it tightly against the tubing. The seal is not affected by slight axial movement caused by expansion and contraction of the tubing.

• **Case No. 2** — For heating and cooling five of its plating tanks, Van Der Horst Corp. of America, Olean, N. Y., uses heat exchangers made of A-40 seamless titanium tubing. It is supplied by Superior Tube Co., Norristown, Pa.

After more than a year of service,

there is no evidence of attack by the 25 per cent chromic acid solution, one of the most corrosive chemicals used in industry.

• **Tried External Unit** — A pump and heat exchanger of a ferrous alloy was used originally to draw solution from the tank through plastic pipe and to return it after the temperature had been raised or lowered.

The system was not affected by chromic acid but cost too much to build. Broken pipe or heat exchanger tubes, leaky packing, and pump failures cause frequent shutdowns.

• **Exchanger Placed in Tank** — Steam or water, pumped through a U-shaped tube immersed in the tank, controls temperature better and costs less than the external system. All joints are above the plating solution, and the tubing reaches almost to the bottom of the tank. There is no corrosion at the joints and no leakage of steam or water into the tank.

The tubing must withstand corrosion; if it should corrode through, the plating solution would be diluted or even lost. Tubing should be a good conductor, with thin walls, for good heat transfer properties. It must be ductile enough to be bent without cracking, and able to withstand 15 psi steam pressure or 100 psi water pressure.

• **Other Metals Tried** — Van Der Horst Corp. tried other metals, but none gave the results needed. One of them resisted corrosion and was easily formed, but was too soft and had poor heat transfer properties.

Another could be used only temporarily because it corroded rapidly. One of the exotic metals proved satisfactory, but delivery was uncertain. Also, since it was fabricated from short lengths joined by welding, it often failed at the welded joints.

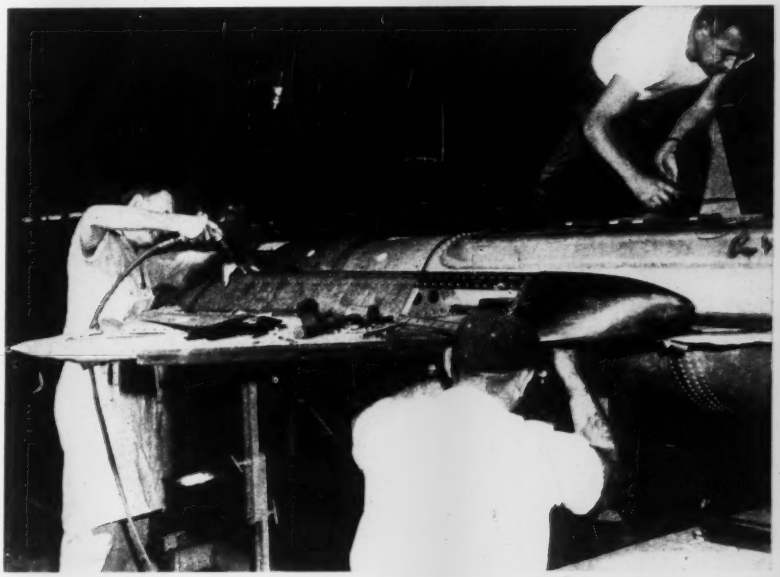
Tape Holds Work Flat

Double sided, pressure sensitive tape solved a tough workholding problem in grinding brass feed discs at Heald Machine Co., Worcester, Mass.

The discs are parts for the feed boxes of Heald internal grinders and must be ground to extreme flatness. Because the brass parts could not be held on a magnetic chuck, they were kept in place with steel strips. But the complexity of the chucking operation held production to about 25 parts an hour.

Production men in the reciprocating grinding department came up with the idea for using pressure sensitive tape. The method simplified the chucking operation, reduced scrap to a negligible point, and increased production 300 per cent.

Parallelism is usually off about 0.0003 in., but it is not an important factor in this part. The technique is now being used for grinding some carbide tools.



Workmen put final touches on a stainless steel camera pod on the new X-7 missile

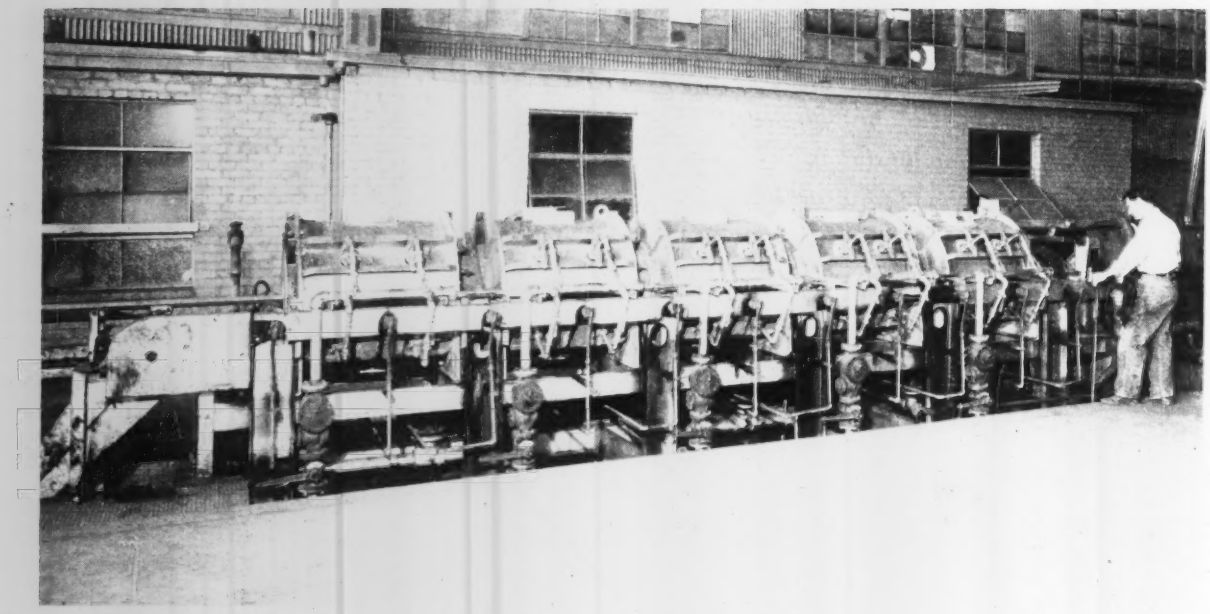
Stainless Saves Weight

It does it in two missile applications since new alloy is only half as thick as skin it supplants in making fuel tank and camera pods for Air Force's X-7

WEIGHT of the fuel tank and wing camera pods on the X-7 missile, made for the Air Force by Lockheed Aircraft Corp., Burbank, Calif., has been cut about in half through use of a relatively new stainless steel alloy. The skin material is only 1/32 in. thick, half the thickness of the material formerly used.

The 108-gallon fuel tank and 5 ft long camera pods are made of AM-350, developed by Allegheny Ludlum Steel Corp. Lockheed engineers found that it resists corrosion and fatigue and has good fabrication properties. It was found to have greater strength-to-weight ratio at high temperatures than various other metals and plastics tested for this purpose.

The X-7, 37 ft long, is the newest of a family of missiles used to test experimental ramjet engines and other components for the Air Force.



Line of barrel type furnaces, with quenching and conveying equipment, takes only one-fourth the space required for conventional bar annealing system

Barrel Furnaces Boost Stainless Bar Production

A better surface is obtained with this compact annealing setup because flames don't touch the work; automatic equipment controls and records temperatures

YOU'D REALIZE the importance of using the right heat treating equipment if you saw the line of barrel type annealing furnaces in operation at the Stainless Steel Div., Jones & Laughlin Steel Corp., Detroit.

The line, designed and built by Selas Corp. of America, Dresher, Pa., is used to anneal several grades of 300 series, hot rolled or cold drawn stainless steel bars and to normalize other grades of steel.

The furnaces and conveying equipment take only one-fourth the floor space required by conventional heat treating equipment of the same capacity. Automatic temperature control equipment is simple in design and promises to minimize maintenance problems.

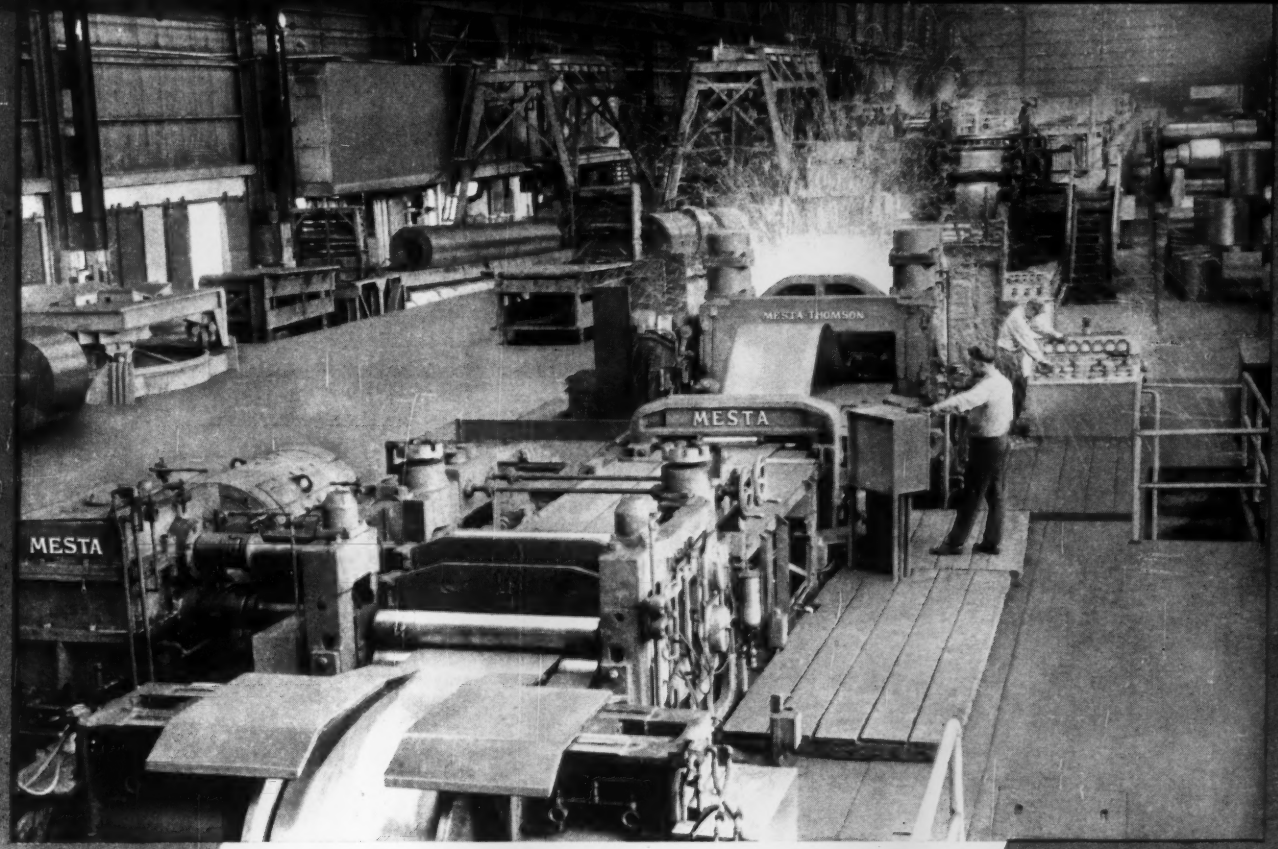
• **Size, Shape No Problem**—The line is used to anneal hexagon, square, and round bars ½ to 4⅜ in. in diameter. The larger the bar, the slower it travels through the furnaces. Example: Bars 1 in. in diameter travel at 4 fpm; hourly output is 700 lb. Bars 4½ in. in diameter pass through the line at 6 ipm; hourly output is 2000 lb.

• **Takes Little Floor Space**—The compact line consists of five separate heating units and a quenching ring. The heating and quenching equipment is 20 ft long, 5 ft wide; total length is 70 ft, including run-in and run-out tables, each 25 ft long. The equipment treats bar stock at the same rate as a conventional, direct fired, continuous furnace 120 ft long, 12 ft wide

• **Heats, Quenches Automatically**—The line is operated by one man. Except for loading, all operations are continuous and automatic. Bars, placed on a feed conveyor, pass through the furnace on rolls synchronized with the conveyor.

As each bar leaves the line, it passes through the funnel shaped quenching ring, where a flow of water, from all sides and under controlled pressure, quenches the bar. A 5 in. extension on the quenching ring provides further cooling.

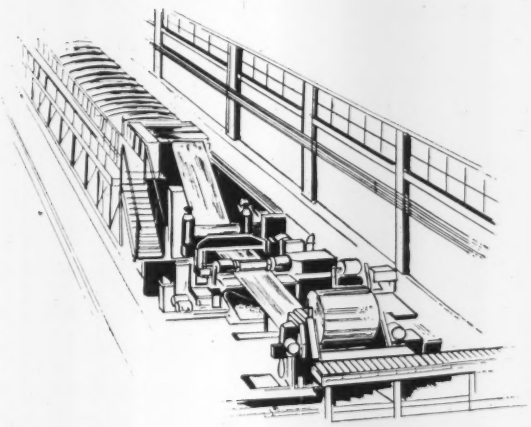
After quenching, the bar is taken away by a discharge conveyor, moving slightly faster than the furnace rolls. The speed differential separates the quenched bar from the one in process, and a kick-out mechanism clears the table while the next bar is being quenched. Bars can be started



MESTA 48" Continuous Pickling Line with Primary and Secondary Processors, Flash Welder, Up-Cut Shears, Side Trimmer and Up-Coiler.

Continuous PICKLING LINES

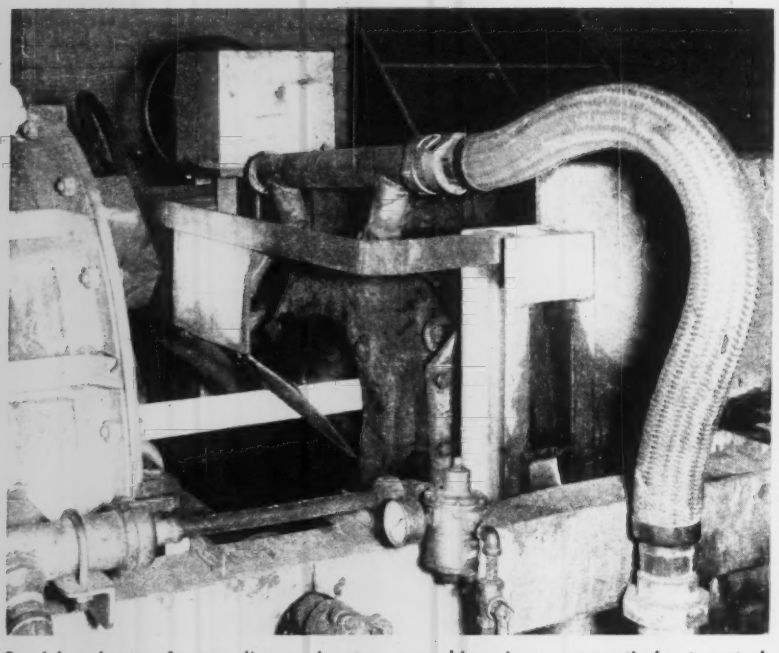
DESIGNED AND BUILT BY MESTA



Designers and Builders of Complete Steel Plants

MESTA MACHINE COMPANY

PITTSBURGH, PENNSYLVANIA



Steel bar leaves furnace line and enters quenching ring; automatic heat control, short exposure to inert combustion gases prevent scale formation

through the furnace butted end to end, and no production time is wasted.

• **Alloy Rolls Cut Maintenance**—Bars pass through the furnace on 12 water cooled alloy rolls—each roll is single grooved and less than 3 ft long. Rolls are 4½ ft apart and will handle bars that are no less than 9 ft long.

Rolls are made of high temperature alloy, but because they are small, would cost little to replace. They are expected to have long service life because they carry relatively little weight (4½ ft of bar stock), and they are water cooled. The original rolls show no sign of wear or deterioration after 1½ years of use under production conditions.

• **Controlled Combustion** — Close control of heat release and heat transfer in the furnaces assures high production and uniform heat treatment.

Natural gas from a low pressure line is mixed with air in a 1:10 ratio by a Selas gas combustion controller. The gas-air ratio and preset mixture pressure are held constant in spite of variations in demand.

Eight ceramic lined, cup shaped Duradiant burners in the wall of each furnace direct heat on the bar from four sides. The ceramic burner lining becomes radiant, speeding combustion and transferring most of the heat to the workpiece by radiation. Continuous processing of the bars, with heating from all sides, assures uniform heat treatment.

• **Leaves No Scale**—Combustion is held close to the burner cavity; flames don't touch the workpiece, although the burner may be within 4½ in. of the bar surface when larger sizes are heated.

No scale forms on the bar, which is heated for only a short time in an atmosphere of neutral combustion products.

• **Automatic Temperature Control**—Each burner has its own manual shutoff valve; it can be shut off or adjusted without affecting the other burners.

Temperature control equipment is arranged in three zones. The first two furnaces are in the first zone; the third and fourth are in another; the last furnace is in still another. Temperature in the first zone is about 50° F lower than it is in the other two.

Three Rayotubes are used as sensing devices to control temperatures inside the furnaces; another, just ahead of the quenching ring, indicates the temperature of the bar just before quenching.

A controller-indicator, operating a motorized valve, regulates the flow of fuel to each zone. A permanent record of temperatures is kept by a strip-chart recorder.

Stainless steel is quenched at about 1950° F. Heating bars to that temperature requires a temperature of about 2150° F. For some types of stainless, bar temperatures may be as high as 2150° F; barrel furnace temperatures will vary accordingly.

• **Shows Versatility**—The furnace line is easily adapted to different bar sizes and lengths. Centering of the quenching ring is the only adjustment required.

With only minor changes, the line can be used to normalize regular steel bars. The quenching ring is removed and a fan is positioned to fast cool the bars as they come off the line.

Clarifier Aids Finishing

A portable, centrifugal coolant clarifier installed at Hartford Screw Machine Co., Greenville, S. C., has made it easier to control the finish on aluminum products. The company also saves $200 a month on fluid replacement.

With the clarifier, coolant can be used until it breaks down chemically. Eliminated: Frequent coolant changes and draining of sumps (the clarifier is cleaned by simply emptying a 3 gallon bowl).

Hartford cools work on its centerless and cylindrical grinding machines with sulfurized base and mineral oils. The clarifier is connected to the coolant return line. It can handle up to 14 gpm, serving several machines at one time.

The clarifier is made by De Laval Separator Co., Poughkeepsie, N. Y.

Hartford formerly drained cooling oils and set them aside, discarding one-fourth to one-third after they had settled. A complete change was made once a week to maintain clean fluids.

Transducer Widens Use of Ultrasonics

Design makes unit more efficient, less costly, and more compact than comparable units

A NEW, spaced-lamination transducer has made several new ultrasonic manufacturing applications possible: Electroplating of aluminum bus bars with silver, cleaning printed circuitry boards for television and radio receivers, and decontaminating nuclear apparatus.

In one application, the number of operations was reduced from 12 to three, and the time required from 30 minutes to 2.5 minutes.

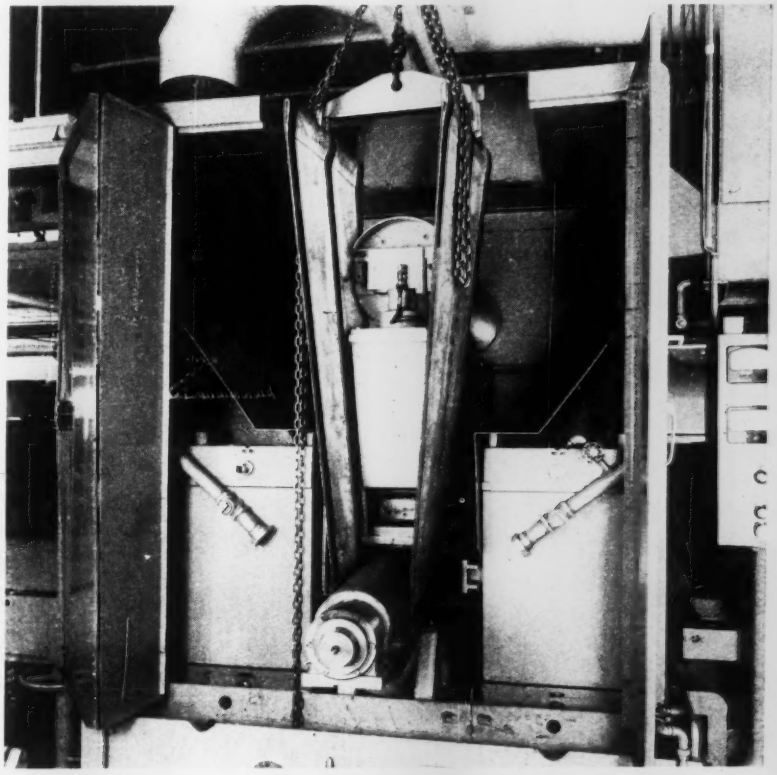
• **Boosts Power** — The transducer (it changes electrical energy into mechanical vibrations) was developed by Westinghouse Electric Corp., Pittsburgh. Its design makes it twice as efficient and more compact than units of comparable power, says Dr. R. A. Ramey, manager of the Westinghouse New Products Engineering Dept.

The Westinghouse transducer is a magnetostrictive type which consists essentially of a coil of wire wrapped around a core of magnetic material. Alternating current flows in the coil, setting up a magnetic field, first in one direction and then in the opposite.

The magnetic field alternately magnetizes and demagnetizes the metal core, causing it to change slightly in length. A metal plate, bonded to the core, is vibrated back and forth at the frequency of the alternating current, about 20,000 cycles.

• **Works Like Piston**—The magnetic core is made up of metal laminations spaced into a latticework across the plate. Each lamination is attached to the plate and becomes a driving element working in unison with the others. In operation, the plate pulses in and out with a pistonlike movement.

"Spaced lamination has proved so successful that we no longer consider the transducer a weak link in ultrasonic systems," Dr. Ramey declares. "Instead, we view it as the component whose perfection will make ultrasonic energy abundant in the future."



With bearing caps removed, roll is hoisted and carried from the grinding machine

Sling Speeds Roll Changes

YOU MAY be able to do something about those time-killing roll changes in your plant with this inexpensive sling equipment. It can slash changing time as much as 80 per cent and personnel hazards are greatly reduced.

The equipment was developed by engineers at the Behr-Manning Co., Troy, N. Y., to change rolls on a large grinder using coated abrasive belts. It could be modified for roll changes on many other types of machines.

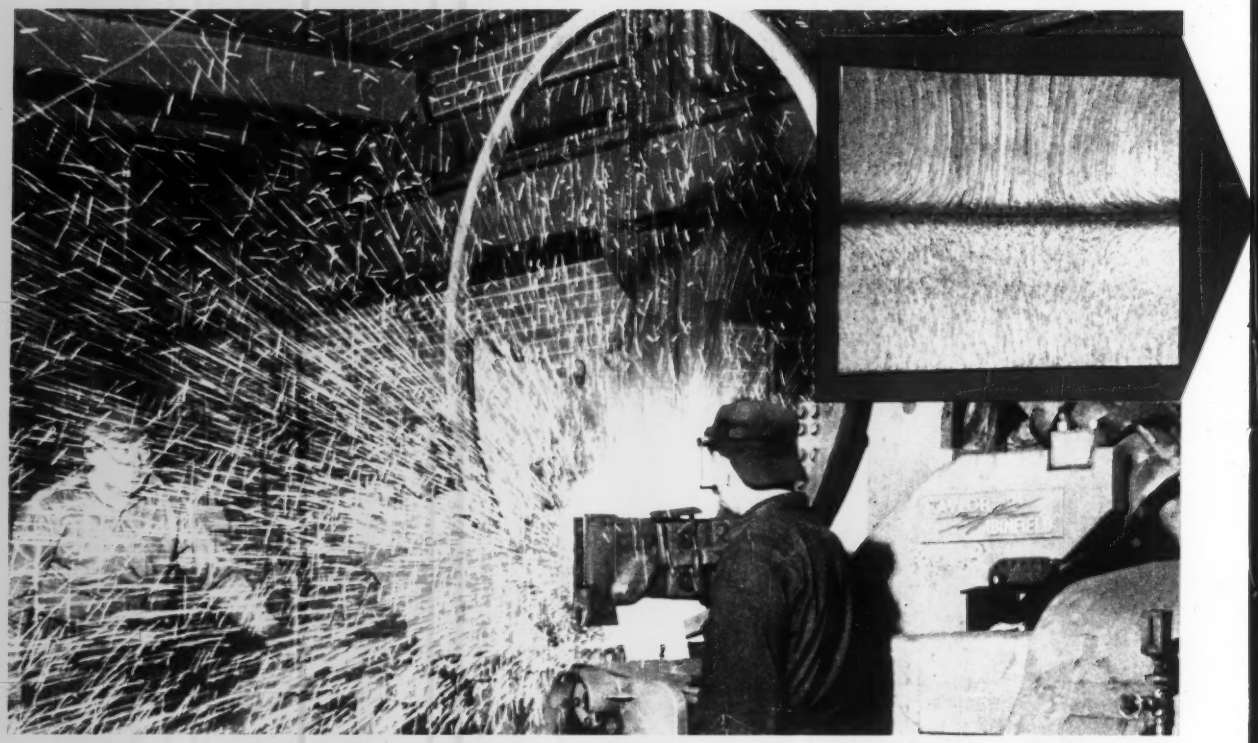
Cost of the sling equipment and dollies (used for storing rolls) was less than $700.

• **Simple Installation** — An access opening with a hinged door was made in the top of the machine housing. A monorail and a 1-ton hoist were installed above the machine; the monorail is directly above and parallel to the roll being removed and extends 6 ft from the front of the machine housing.

The sling was made of heavy canvas, reinforced with heavy webbing. Ends of the canvas and webbing were sewn over steel bars with eyes or clevises at the center. The yoke, or spreader bar used to connect the sling to the crane hook, is slightly wider than the diameter of the idler roll.

• **Faster Roll Changes**—With the sling supporting the roll, the bearing cap is removed. The roll is then lifted up and drawn from the front of the machine. It can be placed on a dolly for removal of journal bearings or lubrication of bearing faces.

Rolls to be installed are lowered into place and held there by the sling until bearing caps are secured.



Buttwelders make clean welds that look like inset above

Welded Rings Cut Costs

With the proper steel and flash buttwelding, you can heat treat them to perform like a solid piece. Take a peek at the grain structure (photos at right) and see for yourself

FLASH BUTTWELDED rings hold a great, untapped potential for cost savings, say H. Collins and E. U. Blanchard of Dresser Mfg. Div., Dresser Industries Inc., Bradford, Pa.

To back their contention, they point to these advantages:

1. The welded rings are as strong as their solid counterparts.

2. There is no practical difference between the microstructures of base metal and welded area when properly heat treated alloys (such as 52100) are used.

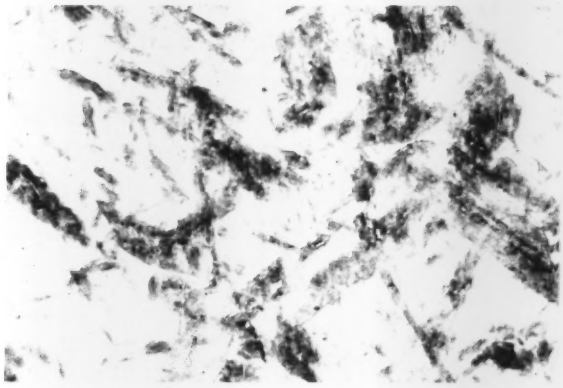
3. The U. S. Navy says welded rings are satisfactory for its ordnance equipment.

4. The method offers one of the least expensive ways of making a ring with complex cross sections.

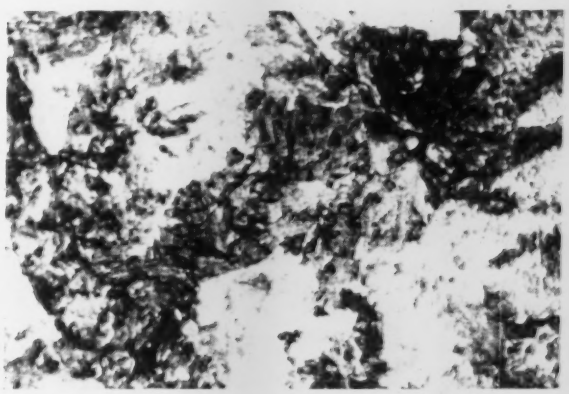
• **How It's Done** — Much of the high quality is due to the action of flash buttwelding. Bars or plates (some have shaped cross sections) are rolled into a circle to bring the ends together for flashing action in the welder.

The bar ends are heated to a plastic state and moved together at a uniformly even rate. At the right time in the heating cycle, upset or forging takes place. Ends are fused, and the molten material is pushed to the outside, cleaning the weld. The heat affected zone is small. In the final operation, upset metal (flash) is ground off.

• **Look Inside**—If you examine the microstructure, you find that the grain size of the weld area is around 4 or 5 (ASTM) against a parent metal size of 8. You can

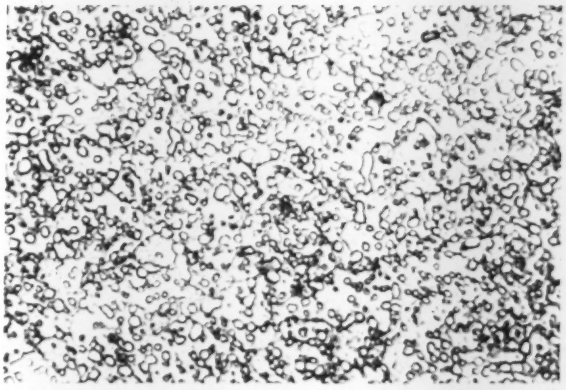


X500 (reduced 1/2)

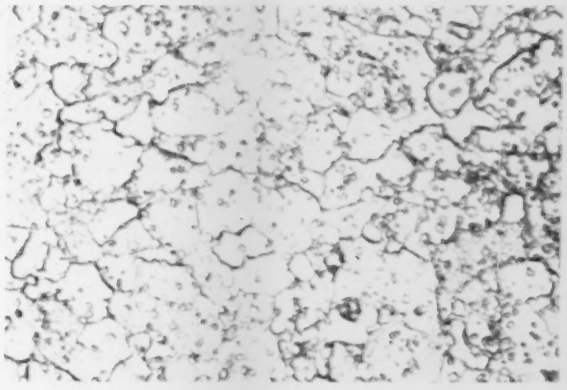


X500 (reduced 1/2)

With good microstructure in parent (left) and weld metals (right) . . .

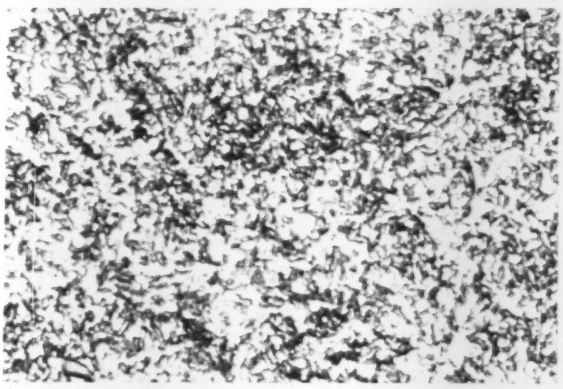


X1000



X1000

. . . same areas have good spheroidized structures when annealed and . . .



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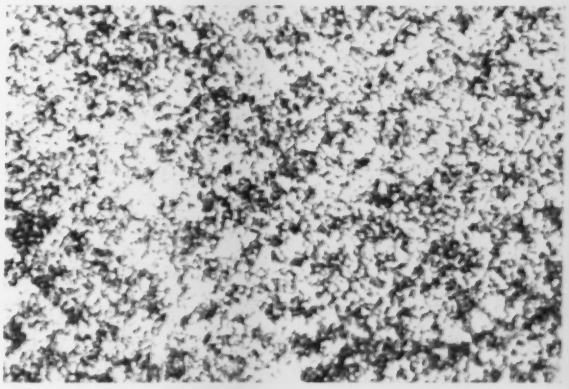


X1000

. . . when heat treated, there's no practical difference between them

heat treat the structure so it compares favorably with the parent metal in hardness and spheroidization.

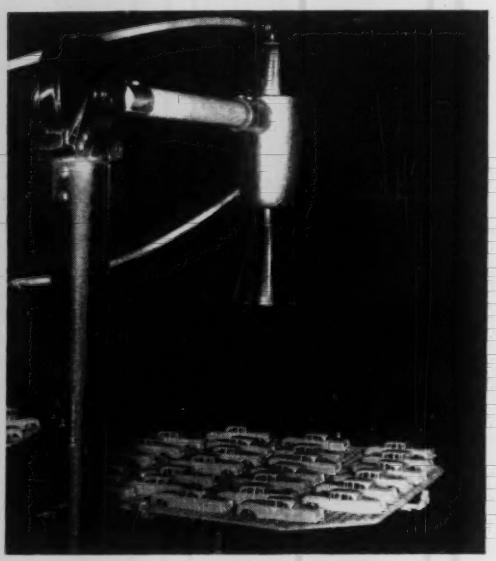
• **Complete Change**—Messrs. Collins and Blanchard point out that even the minor grain changes along the center of the weld joint are completely removed by hardening and tempering. That kind of uniformity is quite necessary for ball bearing races (one of the principal uses of welded rings) since point contact pressures are considerable.

Rings of almost every metal are used in jet engines, electrical generator frames (Reliance Electric & Engineering Co., Cleveland, uses them for its direct current motors), gun mounts, auto parts, and cylinder liners for diesel engines. Sizes start at 5 in. ID. Maximum wall thickness is around 5 in.

tootsietoys

are painted by the millions with

RANSBURG NO. 2 PROCESS



Miniature automobile bodies of the tootsietoy line are efficiently and uniformly painted as trays of cars pass below one of the four Ransburg No. 2 Process atomizing bells.

QUALITY OF THE FINISH IS IMPROVED AND PAINT COSTS ARE CUT 65% WITH

Electrostatic Spray Painting

Dowst Manufacturing Co., Chicago, are sticklers for quality in the production of tootsietoys which are turned out at the rate of 25 million a year.

That's one reason they changed from hand spray to Ransburg Electrostatic Spray Painting.

RESULTS? Rejects are cut from as much as 5% to about 1%, for they're getting a more uniform, higher quality coating on all parts.

Colors are changed easily, and paint mileage is stepped up substantially. For instance, on one toy item, a gallon of paint coated only 1800 units by hand spray. Now, with Ransburg No. 2 Process, they paint 5500 pieces per gallon. That's because of the unmatched efficiency of Ransburg No. 2 Process.

NO REASON WHY YOU CAN'T DO IT, TOO!

Whatever your product—whether it's large or small—we'd like to show you what RANSBURG ELECTROSTATIC PROCESSES can do for you in YOUR finishing department. Write for our No. 2 Process brochure which shows numerous production line examples of electrostatic spray painting on a wide variety of products.

RANSBURG

RANSBURG
Electro-Coating Corp.
P. O. Box 7822 • Indianapolis 23, Indiana

Containers Cut Cost

Sturdy units are stacked to ceiling; they cut rehandling of parts in warehouse and factory

VULCANIZED fiber containers make material handling easier for Heath Co., Benton Harbor, Mich., a maker of radio and electronic kits.

Most of the containers, obtained over three years ago from the National Vulcanized Fibre Co., Wilmington, Del., are still in use.

FIBER BOXES
. . . offer safer, neater storage

Expenditures for the replacement and mailing of missing or damaged parts and related officework have been cut to a minimum.

• **Warehouse Techniques** — Containers are primarily used for the handling and storage of parts inside the plant.

Formed metal corners make the boxes topplefree. They are stacked on large pallets near ceiling height to save floor space. The top pallet can be removed (and replaced) with a fork lift truck when only a few boxes are needed.

The same containers are used in trucking parts to and from Heath's plating plant, 18 miles away, saving rehandling time.

Corrugated cartons were formerly used, but they buckled easily.

New Alloy Perfected

Duraloy Co., Scottdale, Pa., has perfected a new high nickel casting alloy—Duraloy HOM—that has high working strength and resists oxidation at 2200° F. It has usable working strength for selected applications at 2300° F.

Duraloy announces that castings are available in three forms: static, centrifugal, and shell molded.

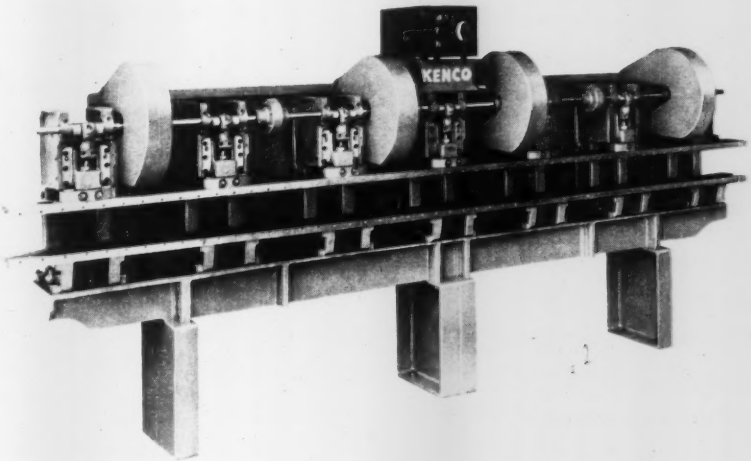
Presses Tied Together Make Versatile Brake

IF you've ever made a press brake double for a punch press, you'll appreciate a new machine introduced by Kenco Mfg. Co.

It's made up of seven 5-ton punch presses that are mounted on a common platen to punch, form, blank, or bend long metal strips.

The company says that extremely long die plates can be used on the machine because the press rams are synchronized, and power is distributed evenly through the length of the machine. The plates can be arranged to accommodate any number of dies or positions within the area of the die plate.

For more information, *write* Kenco Mfg. Co., 5211 Telegraph Rd., Los Angeles, Calif.



Surface Grinder Can Be Built to User Needs

HERE's a surface grinding machine for the small and medium sized jobs that require high accuracy and exceptional surface finish. It grinds work to 6 in. wide and 18 in. long.

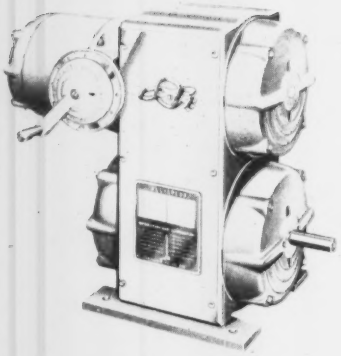
Unit construction permits the machine to be assembled to customer requirements—over a hundred combinations of spindles, spindle drives, locations of handwheels, and similar adjustments are possible. Longitudinal and crossfeeds can be hydraulic or hand.

Hydraulic longitudinal feeds vary from 5 to 100 fpm for the full table travel of 22 in. The crossfeeds provide rates of 0.01 to 0.25 in. at each reversal of the longitudinal travel.

Time saving features of the Micromaster surface grinder include a lever that permits instantane-

ous changing from the selected intermittent crossfeed to a continuous feed of 10 ipm for wheel truing. Another position of the lever results in a continuous crossfeed of 12 fpm for rapid positioning of the wheel.

For more information, *write* Brown & Sharpe Mfg. Co., Providence 1, R. I.



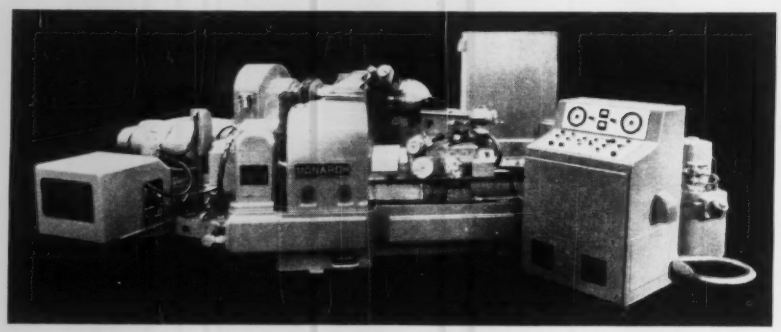
Adjustable Speeds Drive Mounts Almost Anywhere

HERE's a mechanically adjustable speed drive for machine tools and material handling applications that operates from an alternating current source and gives output speeds of 1 to 10,000 rpm. Ratings are 1 to 20 hp.

The basic components of the Allispede drive can be rearranged to suit the application. The design of the unit permits vertical or horizontal mounting on the floor, wall, or ceiling; locating of the output shaft and motor in any of four positions; and positioning of the speed changing mechanisms on top, right, or left of the motor housing.

A constant speed, squirrel cage induction motor provides adjustable speed through the mechanical interaction of adjustable diameter discs and a ribbed belt. Modifications of the drive are available to adapt it to special requirements.

For more information, *write* Dept. P, Louis Allis Co., 427 E. Stewart St., Milwaukee 1, Wis.



Lathe Contours Thin Wall Shapes

IF YOU'RE contour machining thin wall, spherical workpieces and similar shapes, you may be able to do a better job with the new Monarch Series 180 lathe. It can machine diameters of 5 to 15 in.

The chucking lathe has an electrohydraulic tracing system which controls tool slide position within 20 millionths of an inch while tracing around a template.

The spindle is set at a 30 degree angle to the bed. Runout at the nose is less than 25 millionths. There is a constant surface cutting speed over a 6:1 ratio. The speed range is 8½ to 1000 rpm.

Because high precision depends to a considerable extent on constant, lower coolant temperature, water coolant coils are used to hold coolant temperature within plus or minus 0.5° F.

Electrical control of the machine is from a console. To assure ultra-close tolerance performance, the machine should be used in a temperature controlled area. For more information, *write* Monarch Machine Tool Co., Sidney, Ohio.

Blowers Run Quietly

FOR those jobs requiring varying air volume at constant pressure, consider a new series of turbopressure blowers that have been designed for quiet operation.

They come in 1/3 to 50 hp, capable of delivering 125 to 5250 cfm of air at pressures of 4 to 28 ounces per square inch.

The ventilating units have heavy motorshafts for vibrationless operation, welded steel housings to withstand abuse, and a welded motor base for positive alignment. The housings can be moved to any position to provide universal discharge adjustment.

For more information, *write* Chicago Blower Corp., 9856 Pacific Ave., Franklin Park, Ill.

Drills, Taps 15 Holes

IF YOU'RE drilling and tapping multiple holes in a pattern, you can get the job done quicker and at less cost with a multidrill unit made by Commander Mfg. Co.

The Model 3-22 can be mounted on any drill press to work within an area of 3 x 22 in., and can be extended to 35½ in. Maximum capacity of the unit is ⅜ in. in steel; minimum center distance is ½ in.

You can obtain a motor reversing unit for multiple tapping and pitch compensating spindle assemblies for simultaneous tapping of threads of different pitches. For more information, *write* Commander Mfg. Co., 4225 W. Kinzie St., Chicago, Ill.

Spray Painting Unit Also Washes Masks

IF YOU do spray finishing and use fine detail masks or a heavy material for decorating, you'll want to know more about a new machine which combines spray decorating equipment with automatic mask washing.

The machine makes continuous production possible; clean masks are supplied immediately and as frequently as required. The manufacturer claims it can increase production 25 per cent over that possible when separate mask washers are used.

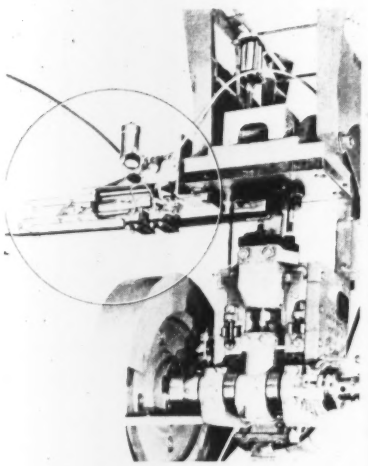
By indexing a rotary plate, the operator starts an operation that puts soiled masks through two washing stations and a blowoff station.

Any of three gun movements (straight line, spinning, and oscillating) can be installed in the machine. It will paint areas up to 6 x 6 in. square. For more information, *write* Conforming Matrix Corp., 345 Toledo Factories Bldg., Toledo 2, Ohio.

Air Stock Feed Boosts Press Output By 10%

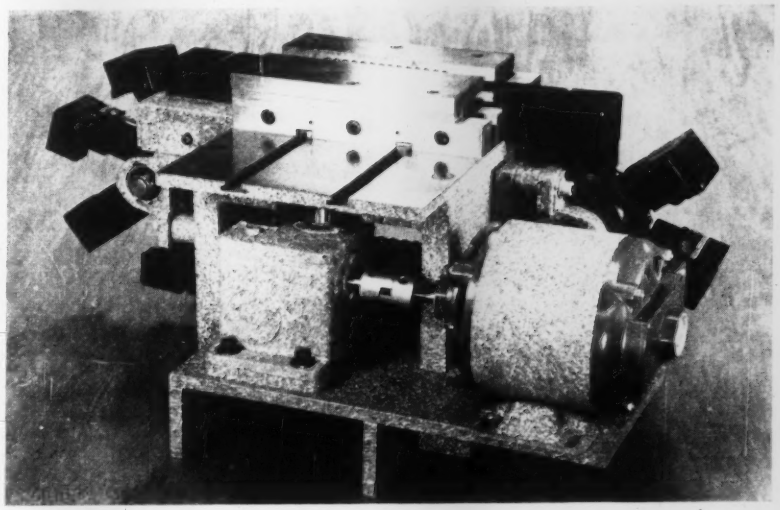
YOU can convert your hand-fed punch press jobs to automatic feed and increase production up to 10 per cent by installing this portable, air operated stock feed. (Tradename: Renco-Aire.)

The unit can boost output and cut operating costs on short run, strip stock feeding jobs as well as on coil stock jobs. It is available in four sizes that make it adaptable to almost any punch press.



Stroke length is readily adjusted on the built-in feed control stop. Feed tolerances may be held to plus or minus 0.002 in. With additional controls, the stock grippers can be set to synchronize with progressive die operations.

Nylon, rubber, or other nonmetallic gripping jaws can replace the steel jaws for feeding highly polished or prefinished materials. For more information, *write* Industrial Sales Div., Cleveland Pneumatic Industries Inc., 64 Old Orchard, Skokie, Ill.



Machine Speeds Small Part Milling

IF YOU are milling small parts in lots of 5000 to 5 million, you may be able to save 50 to 75 per cent of the cost of conventional production milling methods.

A precision machine, called Automatic Milled Parts, can speed those parts past a cutter at the rate of 1500 to 3000 an hour and eliminate expensive labor costs. Milled slots in headed products such as bolts can cost you as little as $2.50 per 1000 parts.

Similar costs can be applied to straight, straddle, and contour milling, facing, deburring, beveling, and grinding.

For straight milling or slotting of aluminum, copper, or plastics, the cross-sectional area of material removed should be no greater than 0.250 sq in. With steel parts, the milled area should not exceed 0.100 sq in. When parts are straddle milled, the total amount of material removed can be doubled (nonferrous and plastic 0.500 sq in., ferrous 0.200 sq in.).

For more information, *write* Automatic Milled Parts Div., Sieburg Industries Inc., Danbury Industrial Park, Danbury, Conn.

Gage Eases Brake Setup

A PRESS brake gage that uses a micrometer adjustment can help you cut your setup time 75 per cent.

Fast settings are possible for bending sheets up or down, hook gaging for turned down flanges and gaging for small flanges and multiple forms.

The unit is easily applied to any press brake. For more information, *write* Addresso Mfg. Co., 9105 W. King St., Franklin Park, Ill.

Brake Is Compact

A versatile 15-ton power press brake does forming, bending, punching, blanking, and related operations. All driving parts are inboard between housings for operating convenience, safety, and compactness.

Positive, instant ram control, enabling smooth and sensitive jogging, is assured by a heavy duty, syn-

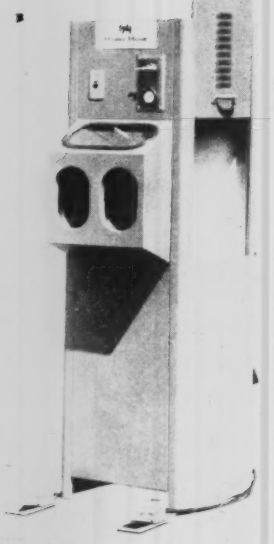
NEW PRODUCTS and equipment

chronized friction clutch and brake.

Laminated nonmetallic ways provide longer service life. *Write*: Niagara Machine & Tool Works, Buffalo, N. Y. *Phone*: Taylor 4070

Finishes Metal Rapidly

High production and precision cleaning, finishing, peening, burnishing, and deburring of metal parts is done with this low cost liquid-blasting machine.



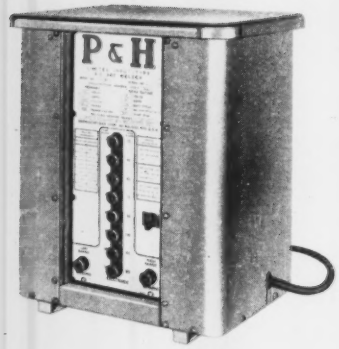
The Model 15 is capable of maintaining microfinishes from 16 to 250 rms by adjusting air pressures and size and type of abrasive media.

The machine can be adapted to existing air supplies. *Write*: Hydro-Hone Corp., 7516 Pacific Blvd., Huntington Park, Calif. *Phone*: Ludlow 7-7112

Welder Is Rugged

This economical and rugged alternating current machine handles welding jobs in the range of 20 to 180 amps.

It has 16 heat steps. A high open circuit of 65 volts permits use of low hydrogen and stainless steel electrodes up to 3/16 in.



Power supply is 230 volts, 50/60 cycle, single phase. Full load input is 37 amperes. *Write*: Harnischfeger Corp., Milwaukee 46, Wis. *Phone*: Orchard 1-4400

Aluminum Melting Units Reduce Metal Loss

DIECASTERS and sand molders can reduce aluminum melting costs with a radiant fired furnace introduced by J. A. Kozma Co. Key to savings: Radiant burners which eliminate flame impingement and local overheating.

Radiation heating provides fast melting with high efficiency, increasing fuel economy. Those features are available to you if you are melting 500 to 2000 lb of metal per hour.

The furnace tilts through a 20 degree arc for pouring. A charging well, rather than a door, lets you use a lifting device to remove steel inserts from scrap diecastings after the aluminum has melted. For more information, *write* J. A. Kozma Co., 2471 Wyoming, Dearborn, Mich.

Bases Double Belt Life

YOU may be able to double the life of motor drive belts through the use of a tension control motor base that can handle NEMA frame motors up to 100 hp.

Called Econ-O-Matic motor bases, the all steel mountings automatically control belt tension, eliminating belt slippage and speed losses at peak loads.

Increased belt life is assured because the bases reduce average tension by almost 50 per cent and still prevent slippage. For more information, *write* American Pulley Co., Philadelphia, Pa.

NEW literature

Write directly to the company for a copy

Electric-Powered Truck

Model F-45T4 electric-powered industrial truck with 4000 lb capacity is described in a bulletin. It is available in 68 and 83 in. high models. Elwell-Parker Electric Co., 4205 St. Clair Ave., Cleveland, Ohio.

Stainless Steel

Stainless steel sheets, strip, and plates are described in a booklet. Detailed information is given on chromium-nickel, chromium, and special grade types. Product Information Service, Armco Steel Corp., Middletown, Ohio.

Stressed Parts Powder

Properties, specifications, and heat treating recommendations for alloy powder HE 6460 are provided in a bulletin, Adv. 1028. The product was developed for use in higher stressed parts produced with existing operating equipment. It provides high strength at low cost. Republic Steel Corp., 1441 Republic Bldg., Cleveland 1, Ohio.

Grinding Safety

Safety Recommendations for Grinding Wheel Operation discusses maximum peripheral speeds, strength classification of grinding wheels, definitions of maximum speeds, the effect of wheel speed on grinding action, safety guards, mounted wheels, proper mounting procedures, truing and dressing, and the dos and don'ts of safe grinding. A table covers conversion of revolutions per minute to surface feet per minute. Grinding Wheel Institute, 2130 Keith Bldg., Cleveland 15, Ohio.

Screw Thread Data

Unified and American National Screw Thread Data is concerned with thread standards and presents the major, minor, and pitch diameters giving the classes, allowances, and tolerances of all threads up to and including 2 in. Eastern Machine Screw Corp., Truman and Barclay Streets, New Haven 6, Conn.

Beryllium-Copper Tubing

Mechanical and physical properties, applications, corrosion resistance, production limits, heat treatment, fabrication, and standard size tolerances of beryllium-copper tubing are covered in Data Memorandum No. 7. Superior Tube Co., 1585 Germantown Ave., Norristown, Pa.

Steelmen See Postholiday Pickup

December 29, 1958

WATCH for a sharp upturn in steelmaking after the holidays. As business activity improves, consumers will start chewing up steel at a faster rate. Since their inventories are low, they'll have to offset faster consumption by increased buying. Although they can still obtain most products within three or four weeks, buyers face extended deliveries on cold-rolled sheets. Most mills require six weeks' leadtime, and at least one is sold out through February.

If the automakers come into the market for bigger tonnages, lesser buyers may have to wait for two months. Demand for galvanized and aluminum coated sheets is so strong that several producers have closed their books on the first quarter.

BUYERS WILL HEDGE— While some consumers are boosting their purchases for immediate consumption, others will be looking to the future. If they think a steel strike is inevitable, they'll jack up their inventories. Anticipating a tighter market, one mill plans full scale operations in January regardless of demand. "If we can't sell all the sheets we make right away, we'll store them for a while," says a mill official.

INVENTORIES WILL RISE— Although it's hard for them to forecast inventory accumulation in a year when the industry faces labor negotiations, market analysts think the buildup will be about 4 million tons—all in the first half. If there's a strike, inventories will be reduced by about 6 million tons a month. If it lasts two months, we'll have a net inventory reduction for the year. The industry couldn't ship enough steel between Sept. 1 and Dec. 31, 1959, to replace all that would have been liquidated.

BLOUGH VIEWS '59— The steel industry has "prospects of reaching an operating rate of about 80 per cent of present capacity" during the first half of 1959, says Roger M. Blough, chairman of U. S. Steel Corp. Steelmakers can expect improved shipments to the construction, farm implement, appliance, machinery, and automotive industries, he believes.

AUTOMOTIVE OUTLOOK— To illustrate how inventory gyrations can whipsaw the steel industry, commercial research men say the automakers will take 50 per cent more steel in calendar 1959 than they did in 1958 if they make only 35 per cent more vehicles. They'll order 14.5 million tons to make 5.8 million cars and 1 million trucks (vs. 9.5 million tons in calendar 1958).

PLATES PERK UP— The outlook for plates has brightened considerably because of two developments: 1. The Supreme Court's reversal of the Memphis decision caused gas transmission companies to confirm tentative line pipe orders. 2. Railroads bought more freight cars (6295) in November than they've purchased in any month since April, 1957. (They ordered 781 in October and 1070 in November, 1957.) Hard pressed to supply a pipe manufacturer, a Chicago steelmaker is booked through February on its 100 in. plate mill. Prior to the Memphis reversal, it had space open in January. December plate bookings of an eastern mill were the best of any month in 1958.

PRODUCTION SKIDS— Because of the Christmas holiday, steelmaking operations fell 6 points last week to 69 per cent of capacity. Production was about 1,835,000 net tons of steel for ingots and castings. December's output was 8.6 million tons. Production in the fourth quarter was 26 million tons. Total for 1958: Almost 85 million ingot tons.

WHERE TO FIND MARKETS & PRICES

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*See page 103, Dec. 22, 1958 issue for current prices on: tubular goods; stainless steel; clad steel; tool steel; refractories; fluorspar; ores; metal powder; electrodes; metallurgical coke; coal chemicals; imported steel. See page 196, Dec. 15, 1958 issue for current prices on ferroalloys. See page 115, Dec. 1, 1958 issue for current prices on boiler tubes.

Outlook: Finished Steel Consumption

Trend, 1959	Use, 1958 (Millions net tons)*
WAREHOUSES, DISTRIBUTORS—Cuts in inventories trimmed 1958 buying. With no reductions in 1959 and a better sales year expected, purchases should rise.	11.1
AUTOMAKERS—Usage will be up almost 50 per cent as automakers' sales and inventories gain.	9.6
CONSTRUCTION—Look for some inventory replenishment. Highway work, state and local projects will take more steel.	9.2
CONTAINERS—Normal growth pattern will continue. Shipments should rise 5 per cent or more.	7.4
CONTRACTORS' PRODUCTS—A moderate improvement probably won't up steel shipments more than 5 per cent.	3.6
MACHINERY, EQUIPMENT, TOOLS—A gradual uptrend will gain momentum as year proceeds. At yearend, buying may be 20 per cent over 1958 levels.	3.2
EXPORT—Sales to Europe face tough sledding, but Canada may take more steel as its economy gains.	2.5
ELECTRICAL MACHINERY—Shipments may dip slightly as utilities buy less heavy equipment.	1.8
RAIL TRANSPORTATION—Long-awaited upturn in buying may begin late in the year, when purchases could be 20 per cent over 1958 levels.	1.6
APPLIANCES—Shipments may be up nearly 10 per cent. This industry may build steel stocks.	1.5
OTHERS—Look for sharp gains in mining, quarrying, and lumbering. Steel for oil well drilling should be in firm demand. Shipments to agricultural equipment producers will be good. Shipbuilding, ordnance, and aircraft may take less steel in 1959.	9.9
TOTAL SHIPMENTS—Predictions average 79 million tons.	61.4
TOTAL PRODUCTION—Predictions average 110 million tons.	84.8

*Estimated by STEEL.

How Steel Usage Grows

IF YOU'RE a steel buyer, chances are you'll need more steel next year, and you'll build your stocks to guard against a possible strike or delivery slowdown. If you're a steelmaker, your sales may be up almost 30 per cent.

Steel producers will turn out about 110 million tons, market analysts predict. Some forecasts are more optimistic. Inland Steel Co., Chicago, predicts output of 110 million to 116 million tons. Forecasts of shipments of finished products average 79 million tons—a 29 per cent improvement over this year's estimated shipments of 61.4 million tons.

• **Inventory Buildup**—While shipments are likely to increase by almost 18 million tons, steel use won't grow that much. "We estimate that total finished steel inventories, including goods in process, will be increased by about 4 million to 5 million tons next year. That compares with a 10 million ton reduction since the inventory peak in June, 1957, and a 6 million ton reduction in 1958," reports Logan T. Johnston, executive vice president, Armco Steel Corp., Middletown, Ohio.

Two Pittsburgh steel corporations have reached similar conclusions. One expects an inventory buildup of 1.5 million tons in the first quarter and 2.5 million tons in the second quarter, with no change in the second half of the year. Another firm thinks stocks will rise by 2 million tons in the first quarter and by 3 million tons in the second quarter.

A steel strike of one month or more could wipe out the extra stocks. If a strike materializes, inventories will be reduced by about 6 million tons a month, a commercial researcher predicts.

• **Leading Buyers**—Look for Detroit to reassert its leadership as a steel consumer in 1959. Automakers haven't been the No. 1 customer for steel since 1955, when their purchases reached 18.7 million tons. This year, warehouses and distributors hold the top spot, taking an estimated 11.1 million tons. Automakers will buy about 9.6 million tons. T. F. Patton, president, Republic Steel Corp., Cleveland, believes auto production next year will exceed 1958's by about 30 per cent. With a buildup in steel inventories expected, Mr. Patton reports shipments to automakers could go as high as 13.6 million tons in 1959.

A midwestern supplier adds: "Next year, automakers may add 800,000 tons to their stocks. Inventory buildup by that industry will begin late in the first quarter and continue throughout the second quarter. Their production will hit top speed at that time, and they won't want to take chances on being caught short by a steel strike."

• **Steel Service Centers** — Warehouses are expected to boost their purchases gradually as their sales increase. Distributors' stocks, estimated at 3.7 million tons in the first quarter, 1958, declined about 10 per cent during the year. Expecting an improved sales year in 1959, distributors are likely to stop inventory cuts. They'll buy as much as they need.

• **Construction** — An eastern steel

producer predicts: "Construction activity should be up about 5 per cent next year. Inventory replenishment in this industry could boost shipments 15 to 20 per cent."

• **Other Leading Customers**—Armco predicts that the machinery and appliance industries will each take 8 per cent more steel next year.

Republic's analysts think canners will use about 7 per cent more.

Bethlehem Steel Co., Bethlehem, Pa., predicts gains of 20 per cent or more next year in shipments to automakers, railroads, mining, quarrying, and lumbering industries.

In a few areas, the outlook is less encouraging. A midwestern observer thinks that the steel exports won't fare well because: "We're pricing ourselves out of the world market."

An eastern steelmaker thinks shipbuilding, aircraft, and ordnance will require less steel in 1959, but reductions in shipments aren't expected to exceed 5 per cent.

• **Product by Product**—The outlook for increased auto production is good news for sheet suppliers.

Line pipe shipments may be up as much as 30 per cent next year. Stainless steel producers are looking for about a 30 per cent gain.

Steel bars should sell better as autos and machinery gain.

Sheets, Strip . . .

Sheet & Strip Prices, Pages 81 & 82

Demand for galvanized sheets continues strong and is now running into second quarter. This run of heavy buying of coated sheets has continued for so long that some sellers are beginning to wonder if an undue speculative element is developing. Quotas are being more rigidly exercised, and buying at this time for second quarter shipment is being discouraged.

In other sheet categories, the mills are interested in booking all the tonnage they can get. Most producers have plenty of capacity available for first quarter. In cold-rolled sheets, most mills can offer shipments in around six weeks on the average, and in hot sheets, around four weeks. Most specialties are being offered for delivery within four to six weeks, depending upon the product.

Pittsburgh district mills are engaged close to capacity on cold-rolled and galvanized sheets. December shipments were on a par with those in November, despite instructions from some customers to hold deliveries until after the turn of the year. Automotive demand is strong, but sporadic labor trouble at Chrysler Corp. plants has caused some suppliers to request delayed shipments.

At least one Pittsburgh producer plans full scale operations in January regardless of the demand level. "If we can't sell all the sheets we make right away, we'll store them for a while," the sales manager says.

In the Chicago market, Inland Steel is sold out on cold-rolled sheets through February, and on galvanized sheets through March. The company is booking second quarter tonnage on the tighter products, but only to the extent that the advance orders are in harmony with the customers' recent orders.

The mills point out that all of the advance buying may not mean a thing beyond the fact that consumers are optimistic concerning their 1959 requirements. If there is no steel strike, or if requirements don't come up to expectations, the tonnage on books can be canceled.

Record demand for galvanized sheets will continue through the first half of 1959, says Seymour Waldman, president, Rolled Steel Corp., Skokie, Ill. Production rose 10 per cent over the first three quarters of 1958, he points out, during which time ingot output declined 33 per cent.

The stronger galvanized sheet demand is attributed to availability of an improved product. Mr. Waldman says that many items formerly had to be drawn from cold-rolled steel, then coated with zinc, chrome, or cadmium in a separate operation. Now they can be stamped directly from continuous mill galvanized sheets.

Tin Plate . . .

Tin Plate Prices, Page 82

Shipments of metal cans in October amounted to 445,790 tons, compared with 562,870 in September and 405,814 in October, 1957, reports the Bureau of the Census. The total for the first ten months was 4,134,164 tons, up from the corresponding period of 1957, when 4,018,673 tons were shipped.

Movement of fruit and vegetable cans in October was 152,415 tons, vs. 259,124 in September and 135,038 in October last year. The total for the first ten months was 1,410,534 tons, vs. 1,358,972 tons in the same period of last year.

Shipments of beer cans (second largest category) was 62,412 tons in October, vs. 68,500 in September and 55,248 in October last year. The ten-month total was 707,183 tons, against 689,314 tons in the same period of 1957.

Stainless Steel . . .

The advance in prices by one stainless steel producer (about 3¾ per cent on billets, bars, and wire) caught most makers by surprise, but it's expected the increases will stick. Producers would like to raise prices on volume items (sheets and strip), but there's too much competition, and recent action of aluminum poducers (guaranteeing firm prices through June) is a deterrent.

December stainless steel shipments about equaled November's. Producers aren't fully booked for January, but there has been no slowdown in ordering. Auto shipments are adversely affected by yearend inventory reductions and labor trouble. Expectations are that January's shipments will top December's, while February's output will surpass January's. First quarter, 1959, shipments are expected to better those in the fourth quarter, 1958.

Plates . . .

Plate Prices, age 80

The Supreme Court's reversal of the lower court's decision in the Memphis gas rate case is resulting in a sizable pickup in demand for steel plates required for pipelines. The increased activity is more than had been anticipated.

A midwest producer of welded pipe has orders on its books for pipe that have been held up for more than a year. This maker is now receiving releases, and as a result a midwestern steel producer's 100-in. plate mill is booked up

through February. Were it not for pipeline tonnage, this mill would have open spaces in its January rolling schedule.

Demand from other areas of plate consumption also is perking up, and as deliveries begin to show signs of becoming more extended, consumers show more interest in their forward needs. Plate sellers, generally, anticipate a moderate, steady gain in business over the next few months. Users are expected to buy some tonnage for inventory as well as for current needs, as seasonal work develops in the spring. Shipwork also is expected to provide substantial demand, and some improvement in railroad requirements is predicted.

Two large projects are pending in the Pacific Northwest. One involves 18,855 tons of plates for Seattle's Tolt River water supply line. The second involves 6000 tons for a Navy drydock at Puget Sound.

Anhydride Price Reduced

Methyl nadic anhydride in 15 and 55 gallon drums has been reduced 18 to 20 cents a pound by the National Aniline Div., Allied Chemical, New York. Fifty-five gallon drums (500 lb net) are quoted $1.05 a pound east of Denver, down 20 cents. West of Denver, the price is $1.07 a pound. Fifteen gallon drums containing 135 lb net have been reduced 18 cents a pound. Less than drum quantities also are quoted lower.

Markets Aluminum Powder

Bulk aluminum oxide and formed shapes are being marketed by Gulton Industries Inc., Metuchen, N. J., Robert Cunha, division general manager, announced last week.

Developed by a French associate of Gulton, the aluminum oxide powder is offered at a guaranteed purity of 99.96 per cent, with average particle size measuring 0.2 and 0.3 microns. The largest industrial application is in ceramic cutting tools. Additional applications include: Vacuum tube cases, radomes, antennas, and high temperature electronic components.

Steel Shipments by Markets—October, 1958

(All grades; net tons)

	October		First 10 Months	
Markets	**1958**	**1957**	**1958**	**1957**
Converting, processing	272,582	301,295	2,339,591	3,103,761
Forgings (except auto)	72,844	74,427	596,380	922,882
Bolts, nuts, etc.	111,132	103,065	675,085	967,948
Warehouses:				
Oil & Gas	93,706	172,214	784,281	2,077,242
All other	1,020,238	956,262	8,105,205	10,759,456
Total	1,113,944	1,128,476	8,889,486	12,836,698
Construction:				
Rail transportation	3,341	7,646	38,385	60,223
Oil & Gas	199,212	301,752	1,864,332	2,994,418
All other	578,839	736,384	5,475,753	7,644,180
Total	781,392	1,045,782	7,378,470	10,698,821
Contractors' Products	333,568	265,561	2,855,997	2,955,502
Automotive:				
Cars, trucks, etc.	1,023,280	1,370,692	7,411,726	11,512,658
Forgings	33,426	29,688	212,934	281,318
Total	1,056,706	1,400,380	7,624,660	11,793,376
Rail Transportation:				
Rails, track, and equipment	35,259	53,637	500,196	1,296,338
Cars & Locomotives	96,222	204,997	709,692	2,360,417
Rapid transit, etc.	1,989	3,218	17,399	33,142
Total	133,470	261,852	1,227,287	3,689,897
Shipbuilding, etc.	57,206	123,563	670,532	1,055,531
Aircraft	5,770	5,538	49,726	90,772
Oil & gas drilling	25,404	47,212	216,296	628,479
Mining, lumbering, etc.	15,492	24,303	150,052	290,166
Agricultural:				
Machinery	90,947	84,393	740,763	743,356
Other	26,503	16,032	250,067	163,435
Total	117,450	97,425	990,830	906,791
Machinery, tools, etc.	312,628	342,536	2,536,009	3,916,455
Elec. machinery, etc.	170,200	172,687	1,430,702	1,799,759
Appliances, etc.	183,639	152,818	1,244,044	1,299,063
Other equipment	180,952	159,603	1,497,370	1,584,018
Containers:				
Cans & closures	801,682	300,181	5,028,102	4,349,383
Barrels, etc.	80,904	64,267	657,319	724,590
All other	54,082	44,206	417,450	518,053
Total	936,668	408,594	6,102,871	5,592,026
Ordnance, etc.	17,214	17,864	203,775	318,066
Nonreported shipments	72,655	63,341	572,697	716,031
Total Domestic	5,970,916	6,197,222	47,191,860	65,194,042
Exports	253,594	353,468	2,034,213	3,961,489
Total Shipments	6,224,510	6,550,690	49,226,073	69,155,531

Data from the American Iron & Steel Institute.

DISTRICT INGOT RATES

(Percentage of capacity engaged)

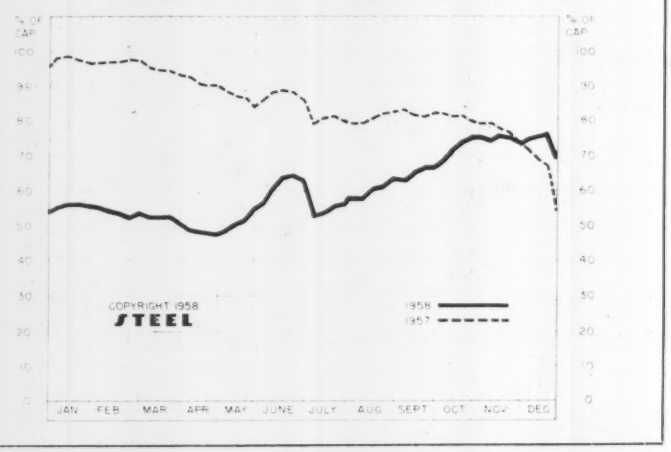
	Week Ended Dec. 28	Change	Same Week 1957	Same Week 1956
Pittsburgh	63	— 7*	47.5	88
Chicago	86	+ 1*	75	103.5
Eastern	57	—15	80.5	99
Youngstown	50	—12	35	85
Wheeling	71	—14*	49	92
Cleveland	66	— 7*	51	90.5
Buffalo	66	0	61	107.5
Birmingham	71.5	+ 4.5	72.5	94.5
Cincinnati	82	— 0.5*	60	90
St. Louis	73	—21	51	64
Detroit	86	— 8	51	94.5
Western	79	— 0.5*	77	103
National Rate	69	— 6*	54	94.5

INGOT PRODUCTION‡

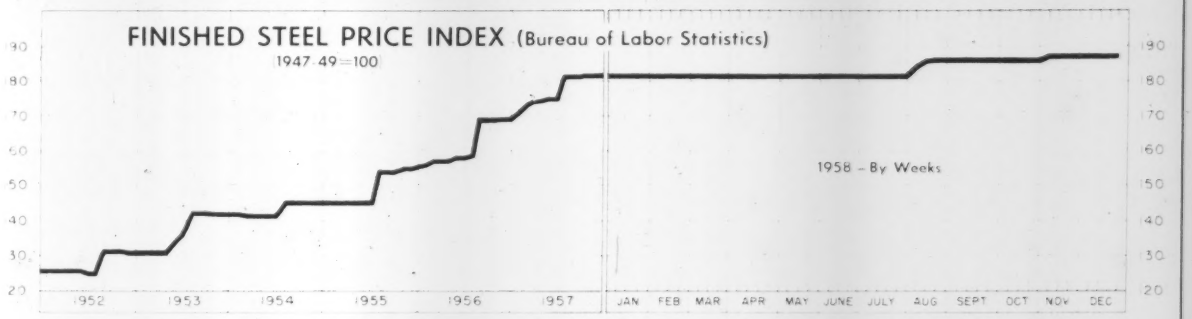
	Week Ended Dec. 28	Week Ago	Month Ago	Year Ago
INDEX (1947-49=100)	114.5	125.2	123.8	85.0
NET TONS (In thousands)	1,840	2,011	1,988	1,366

*Change from preceding week's revised rate. †Estimated. ‡American Iron & Steel Institute. Weekly capacity (net tons): 2,699,173 in 1958; 2,559,490 in 1957; 2,461,893 in 1956.

NATIONAL STEELWORKS OPERATIONS



Price Indexes and Composites



Dec. 23, 1958	Week Ago	Month Ago	Nov. Avg	Year Ago
187.4	187.4	187.4	187.4	181.7

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended Dec. 23

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them, write to STEEL.

Rails, Standard No. 1	$5.825
Rails, Light, 40 lb	7.292
Tie Plates	6.875
Axles, Railway	10.175
Wheels, Freight Car, 38 in. (per wheel)	62.000
Plates, Carbon	6.350
Structural Shapes	6.167
Bars, Tool Steel, Carbon (lb)	0.560
Bars, Tool Steel, Alloy, Oil Hardening Die (lb)	0.680
Bars, Tool Steel, H.R., Alloy, High Speed, W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.060 (lb)	1.400
Bars, Tool Steel, H.R., Alloy, High Speed, W18, Cr 4, V 1 (lb)	1.895
Bars, H.R., Alloy	10.775
Bars, H.R., Stainless, 303 (lb)	0.525
Bars, H.R., Carbon	6.675
Bars, Reinforcing	6.385
Bars, C.F., Carbon	10.710
Bars, C.F., Alloy	14.125
Bars, C.F., Stainless, 302 (lb)	0.553
Sheets, H.R., Carbon	6.350
Sheets, C.R., Carbon	7.300
Sheets, Galvanized	8.695
Sheets, C.R., Stainless, 302 (lb)	0.688
Sheets, Electrical	12.625
Strip, C.R., Carbon	9.489
Strip, C.R., Stainless, 430 (lb)	0.493
Strip, H.R., Carbon	6.250
Pipe, Black, Buttweld (100 ft)	20.525
Pipe, Galv., Buttweld (100 ft)	24.315
Pipe, Line (100 ft)	205.710
Casing, Oil Well, Carbon (100 ft)	201.080
Casing, Oil Well, Alloy (100 ft)	315.213
Tubes, Boiler (100 ft)	51.200
Tubing, Mechanical, Carbon (100 ft)	26.157
Tubing, Mechanical, Stainless, 304 (100 ft)	205.608
Tin Plate, Hot-dipped, 1.25 lb (95 lb base box)	10.100
Tin Plate, Electrolytic, 0.25 lb (95 lb base box)	8.800
Black Plate, Cannmaking Quality (95 lb base box)	7.900
Wire, Drawn, Carbon	10.575
Wire, Drawn, Stainless, 430 (lb)	0.653
Bale Ties (bundles)	7.967
Nails, Wire, 8d Common	9.828
Wire, Barbed (80-rod spool)	8.719
Woven Wire Fence (20-rod roll)	21.737

STEEL's FINISHED STEEL PRICE INDEX*

	Dec. 24 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Index (1935-39 avg=100)	247.82	247.82	247.82	239.15	189.74
Index in cents per lb	6.713	6.713	6.713	6.479	5.140

STEEL's ARITHMETICAL COMPOSITES*

Finished Steel, NT	$149.96	$149.96	$149.96	$145.42	$114.64
No. 2 Fdry Pig Iron, GT	66.49	66.49	66.49	66.49	56.54
Basic Pig Iron, GT	65.99	65.99	65.99	65.99	56.04
Malleable Pig Iron, GT	67.27	67.27	67.27	67.27	57.27
Steelmaking Scrap, GT	39.66	39.17	40.33	33.17	31.33

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL	Dec. 24 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bars, H.R., Pittsburgh	5.675	5.675	5.675	5.425	4.15
Bars, H.R., Chicago	5.675	5.675	5.675	5.425	4.15
Bars, H.R., deld. Philadelphia	5.975	5.975	5.975	5.725	5.302
Bars, C.F., Pittsburgh	7.65*	7.65*	7.65*	7.30*	5.20
Shapes, Std., Pittsburgh	5.50	5.50	5.50	5.275	4.10
Shapes, Std., Chicago	5.50	5.50	5.50	5.275	4.10
Shapes, deld., Philadelphia	5.77	5.77	5.77	5.545	4.38
Plates, Pittsburgh	5.30	5.30	5.30	5.10	4.10
Plates, Chicago	5.30	5.30	5.30	5.10	4.10
Plates, Coatesville, Pa.	5.30	5.30	5.30	5.10	4.35
Plates, Sparrows Point, Md.	5.30	5.30	5.30	5.10	4.10
Plates, Claymont, Deld.	5.30	5.30	5.30	5.70	4.55
Sheets, H.R., Pittsburgh	5.10	5.10	5.10	4.925	3.925
Sheets, H.R., Chicago	5.10	5.10	5.10	4.925	3.925
Sheets, C.R., Pittsburgh	6.275	6.275	6.275	6.05	4.775
Sheets, C.R., Chicago	6.275	6.275	6.275	6.05	4.775
Sheets, C.R., Detroit	6.275	6.275	6.275	6.05-6.15	4.975
Sheets, Galv., Pittsburgh	6.875	6.875	6.875	6.60	5.275
Strip, H.R., Pittsburgh	5.10	5.10	5.10	4.925	4.425
Strip, H.R., Chicago	5.10	5.10	5.10	4.925	3.925
Strip, C.R., Pittsburgh	7.425	7.425	7.425	7.15	5.45
Strip, C.R., Chicago	7.425	7.425	7.425	7.15	5.70
Strip, C.R., Detroit	7.425	7.425	7.425	7.25	5.45-6.05
Wire, Basic, Pittsburgh	8.00	8.00	8.00	7.65	5.525
Nails, Wire, Pittsburgh	8.95	8.95	8.95	8.95	6.55
Tin plate (1.50 lb) box, Pitts.	$10.65	$10.65	$10.65	$10.30	$8.95

*Including 0.35c for special quality.

SEMIFINISHED STEEL					
Billets, forging, Pitts. (NT)	$99.50	$99.50	$99.50	$96.00	$75.50
Wire rods ⅞-⅝" Pitts.	6.40	6.40	6.40	6.15	4.525

PIG IRON, Gross Ton	Dec. 24 1958	Week Ago	Month Ago	Year Ago	5 Yr Ago
Bessemer, Pitts.	$67.00	$67.00	$67.00	$67.00	$57.00
Basic, Valley	66.00	66.00	66.00	66.00	56.00
Basic, deld., Phila.	70.41	70.41	70.41	70.01	60.75
No. 2 Fdry., Neville Island, Pa.	66.50	66.50	66.50	66.50	56.50
No. 2 Fdry., Chicago	66.50	66.50	66.50	66.50	56.50
No. 2 Fdry., deld., Phila.	70.91	70.91	70.91	70.51	61.25
No. 2 Fdry., Birm.	62.50	62.50	62.50	62.50	52.88
No. 2 Fdry (Birm.) deld. Cin.	70.20	70.20	70.20	70.20	60.43
Malleable, Valley	66.50	66.50	66.50	66.50	56.50
Malleable, Chicago	66.50	66.50	66.50	66.50	56.50
Ferromanganese, net ton†	245.00	245.00	245.00	245.00	200.00

†74-76% Mn, Duquesne, Pa.

SCRAP, Gross Ton (Including broker's commission)					
No. 1 Heavy Melt, Pittsburgh	$42.50	$41.50	$42.50	$31.50	$32.50
No. 1 Heavy Melt, E. Pa.	34.00	34.00	36.00	37.00	31.00
No. 1 Heavy Melt, Chicago	42.50	42.00	42.50	31.00	30.50
No. 1 Heavy Melt, Valley	42.50	42.50	43.50	29.50	29.50
No. 1 Heavy Melt, Cleve.	39.00	39.00	40.00	26.50	29.50
No. 1 Heavy Melt, Buffalo	33.50	33.50	35.50	30.50	29.50
Rails, Rerolling, Chicago	62.50	62.50	62.50	49.50	42.50
No. 1 Cast, Chicago	45.50	45.50	45.50	38.50	33.50

COKE, Net Ton					
Beehive, Furn., Connlsvl.	$15.25	$15.25	$15.25	$15.25	$14.75
Beehive, Fdry., Connlsvl.	18.25	18.25	18.25	18.25	16.75
Oven, Fdry., Milwaukee	30.50	30.50	30.50	30.50	25.25

Steel Prices

Mill prices as reported to STEEL, Dec. 24, cents per pound pany. Key to producers, page 81, footnotes, page 83. Code number following mill points indicates producing com expect as otherwise noted. Changes show in italics.

SEMIFINISHED

INGOTS, Carbon, Forging (NT)
Munhall,Pa. U5 ....$76.00

INGOTS, Alloy (NT)
Detroit S41 .....$82.00
Economy,Pa. B14 ....82.00
Farrell,Pa. S3 .....82.00
Lowellville,O. S3 .....82.00
Midland,Pa. C18 .....82.00
Munhall,Pa. U5 .....82.00
Sharon,Pa. S3 .....82.00

BILLETS, BLOOMS & SLABS
Carbon, Rerolling (NT)
Bartonville,Ill. K4 ....$82.00
Bessemer,Pa. U5 .....80.00
Buffalo R2 .....80.00
Clairton,Pa. U5 .....80.00
Ensley,Ala. T2 .....80.00
Fairfield,Ala. T2 .....80.00
Fontana,Calif. K1 .....90.50
Gary,Ind. U5 .....80.00
Johnstown,Pa. B3 .....80.00
Lackawanna,N.Y. B2, S0 .....80.00
Munhall,Pa. U5 .....80.00
Owensboro,Ky. G8 .....80.00
S.Chicago,Ill. R2, U5 .....80.00
S.Duquesne,Pa. U5 .....80.00
Sterling,Ill. N15 .....80.00
Youngstown R2 .....80.00

Carbon, Forging (NT)
Bessemer,Pa. U5 ....$99.50
Buffalo R2 .....99.50
Canton,O. R2 .....102.00
Clairton,Pa. U5 .....99.50
Conshohocken,Pa. A3 ..104.50
Ensley,Ala. T2 .....99.50
Fairfield,Ala. T2 .....99.50
Farrell,Pa. S3 .....99.50
Fontana,Calif. K1 ....109.00
Gary,Ind. U5 .....99.50
Geneva,Utah C11 .....99.50
Houston S5 .....104.50
Johnstown,Pa. B2 .....99.50
Lackawanna,N.Y. B2 ..99.50
LosAngeles B3 .....109.00
Midland,Pa. C18 .....99.50
Munhall,Pa. U5 .....99.50
Owensboro,Ky. G8 .....99.50
Seattle B3 .....112.00
Sharon,Pa. S3 .....99.50
S.Chicago R2, U5, W14 ..99.50
S.Duquesne,Pa. U5 .....99.50
S.SanFrancisco B3 ....109.00
Warren,O. C17 .....99.50

Alloy, Forging (NT)
Bethlehem,Pa. B2 ....$119.00
Bridgeport,Conn. C32 ..119.00
Buffalo R2 .....119.00
Canton,O. R2, T7 .....119.00
Conshohocken,Pa. A3 ..126.00
Detroit S41 .....119.00
Economy,Pa. B14 .....119.00
Farrell,Pa. S3 .....119.00
Fontana,Calif. K1 .....140.00
Gary,Ind. U5 .....119.00
Houston S5 .....124.00
Ind.Harbor,Ind. Y1 .....119.00
Johnstown,Pa. B2 .....119.00
Lackawanna,N.Y. B2 ..119.00
LosAngeles B3 .....139.00
Lowellville,O. S3 .....119.00
Massillon,O. R2 .....119.00
Midland,Pa. C18 .....119.00
Munhall,Pa. U5 .....119.00
Owensboro,Ky. G8 .....119.00
Sharon,Pa. S3 .....119.00
S.Chicago R2,U5,W14 ..119.00
S.Duquesne,Pa. U5 .....119.00
Struthers,O. Y1 .....119.00
Warren,O. C17 .....119.00

ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2 .....$122.50
Canton,O. R2 .....125.00
Cleveland R2 .....122.50
Gary,Ind. U5 .....122.50
S.Chicago,Ill. R2, W14 ..122.50
S.Duquesne,Pa. U5 ..122.50
Warren,O. C17 .....122.50

SKELP
Aliquippa,Pa. J5 .....5.05
Munhall,Pa. U5 .....5.05
Pittsburgh J5 .....5.05
Warren,O. R2 .....5.05
Youngstown R2, U5 .....5.05

WIRE RODS
AlabamaCity,Ala. R2 ..6.40
Aliquippa,Pa. J5 .....6.40
Alton,Ill. L1 .....6.60
Bartonville,Ill. K4 .....6.50
Buffalo W12 .....6.40
Cleveland A7 .....6.40
Donora,Pa. A7 .....6.40
Fairfield,Ala. T2 .....6.40
Houston S5 .....6.65
IndianaHarbor,Ind. Y1 ..6.40
Johnstown,Pa. B2 .....6.40
Joliet,Ill. A7 .....6.40
KansasCity,Mo. S5 ....6.65
Kokomo,Ind. C16 .....6.50
LosAngeles B3 .....7.20
Minnequa,Colo. C10 ....6.65
Monessen,Pa. P7 .....6.40
N.Tonawanda,N.Y. B11 ..6.40
Pittsburg,Calif. C11 ....7.20
Portsmouth,O. P12 .....6.40
Roebling,N.J. R5 .....6.50
S.Chicago,Ill. R2, W14 ..6.40
SparrowsPoint,Md. B2 ..6.50
Sterling,Ill.(1) N15 ....6.40
Sterling,Ill. N15 .....6.50
Struthers,O. Y1 .....6.40
Worcester,Mass. A7 ....6.70

STRUCTURALS

Carbon Steel Std. Shapes
AlabamaCity,Ala. R2 ...5.50
Aliquippa,Pa. J5 .....5.50
Atlanta A11 .....5.70
Bessemer,Ala. T2 .....5.50
Bethlehem,Pa. B2 .....5.55
Birmingham C15 .....5.50
Clairton,Pa. U5 .....5.50
Fairfield,Ala. T2 .....5.50
Fontana,Calif. K1 .....6.30
Gary,Ind. U5 .....5.50
Geneva,Utah C11 .....5.50
Houston S5 .....5.60
Ind.Harbor,Ind. I-2, Y1 .5.50
Johnstown,Pa. B2 .....5.55
Joliet,Ill. P22 .....5.50
KansasCity,Mo. S5 .....5.60
Lackawanna,N.Y. B2 ..5.55
LosAngeles B3 .....6.20
Minnequa,Colo. C10 ....5.80
Munhall,Pa. U5 .....5.50
Niles, Calif. P1 .....6.25
Phoenixville,Pa. P4 .....5.55
Portland,Oreg. O4 .....6.25
Seattle B3 .....6.25
S.Chicago,Ill. U5, W14 ..5.50
S.SanFrancisco B3 ....6.15
Sterling,Ill. N15 .....5.50
Torrance,Calif. C11 ....6.20
Weirton,W.Va. W6 ....5.50

Wide Flange
Bethlehem,Pa. B2 .....5.55
Clairton,Pa. U5 .....5.50
Fontana,Calif. K1 .....6.45
IndianaHarbor,Ind. I-2 ..5.50
Lackawanna,N.Y. B2 ..5.55
Munhall,Pa. U5 .....5.50
Phoenixville,Pa. P4 .....5.55
S.Chicago,Ill. U5 .....5.50
Weirton,W.Va. W6 ....5.50

Alloy Std. Shapes
Aliquippa,Pa. J5 .....6.80
Clairton,Pa. U5 .....6.80
Gary,Ind. U5 .....6.80
Houston S5 .....6.90
Munhall,Pa. U5 .....6.80
S.Chicago,Ill. U5, W14 ..6.80

H.S., L.A. Std. Shapes
Aliquippa,Pa. J5 .....8.05
Bessemer,Ala. T2 .....8.05
Bethlehem,Pa. B2 .....8.10
Clairton,Pa. U5 .....8.05
Fairfield,Ala. T2 .....8.05
Fontana,Calif. K1 .....8.85
Gary,Ind. U5 .....8.05
Geneva,Utah C11 .....8.05
Houston S5 .....8.15
Ind.Harbor,Ind. I-2, Y1 ..8.05
Johnstown,Pa. B2 .....8.10
KansasCity,Mo. S5 .....8.15
Lackawanna,N.Y. B2 ..8.10
LosAngeles B3 .....8.75
Munhall,Pa. U5 .....8.05
Seattle B3 .....8.80
S.Chicago,Ill. U5, W14 ..8.05
S.SanFrancisco B3 ....8.70
Struthers,O. Y1 .....8.05

H.S., L.A. Wide Flange
Bethlehem,Pa. B2 .....8.10
Ind.Harbor,Ind. I-2 ....8.05
Lackawanna,N.Y. B2 ..8.10
Munhall,Pa. U5 .....8.05
S.Chicago,Ill. U5 .....8.05

PILING

BEARING PILES
Bethlehem,Pa. B2 .....5.55
Ind.Harbor,Ind. I-2 ....5.50
Lackawanna,N.Y. B2 ..5.55
Munhall,Pa. U5 .....5.50
S.Chicago,Ill. I-2, U5 ..5.50

STEEL SHEET PILING
Ind.Harbor,Ind. I-2 ....6.50
Lackawanna,N.Y. B2 ..6.50
Munhall,Pa. U5 .....6.50
S.Chicago,Ill. I-2, U5 ..6.50
Weirton,W.Va. W6 ....6.50

PLATES

PLATES, Carbon Steel
AlabamaCity,Ala. R2 ...5.30
Aliquippa, J5 .....5.30
Ashland,Ky.(15) A10 ....5.30
Atlanta A11 .....5.50
Bessemer,Ala. T2 .....5.30
Clairton,Pa. U5 .....5.30
Claymont,Del. C22 ....5.30
Cleveland J5, R2 .....5.30
Coatesville,Pa. L7 .....5.30
Conshohocken,Pa. A3 ..5.30
Ecorse,Mich. G5 .....5.30
Fairfield,Ala. T2 .....5.30
Farrell,Pa. S3 .....5.30
Fontana,Calif.(30) K1 ..6.10
Gary,Ind. U5 .....5.30
Geneva,Utah C11 .....5.30
GraniteCity,Ill. G4 .....5.40
Harrisburg,Pa. P4 .....5.30
Houston S5 .....5.40
Ind. Harbor,Ind. I-2, Y1 .5.30
Johnstown,Pa. B2 .....5.30
Lackawanna,N.Y. B2 ..5.30
Mansfield,O. E6 .....5.30
Minnequa,Col. C10 ....6.15
Munhall,Pa. U5 .....5.30
Newport,Ky. A2 .....5.30
Pittsburgh J5 .....5.30
Riverdale,Ill. A1 .....5.30
Seattle B3 .....6.20
Sharon,Pa. S3 .....5.30
S.Chicago,Ill. U5, W14 ..5.30
SparrowsPoint,Md. B2 ..5.30
Sterling,Ill. N15 .....5.30
Steubenville,O. W10 ....5.30
Warren,O. R2 .....5.30
Youngstown U5, Y1 .....5.30
Youngstown(27) R2 .....5.30

PLATES, Carbon Abras. Resist
Claymont,Del. C22 .....7.05
Fontana,Calif. K1 .....7.85
Geneva,Utah C11 .....7.05
Houston S5 .....7.15
Johnstown,Pa. B2 .....7.05
SparrowsPoint,Md. B2 ..7.05

PLATES, Wrought Iron
Economy,Pa. B14 .....13.55

PLATES, H.S., L.A.
Aliquippa,Pa. J5 .....7.95
Ashland,Ky. A10 .....7.95
Bessemer,Ala. T2 .....7.95
Clairton,Pa. U5 .....7.95
Claymont,Del. C22 .....7.95
Cleveland J5, R2 .....7.95
Coatesville,Pa. L7 .....7.95
Conshohocken,Pa. A3 ..7.95
Economy,Pa. B14 .....7.95
Ecorse,Mich. G5 .....7.95
Fairfield,Ala. T2 .....7.95
Farrell,Pa. S3 .....7.95
Fontana,Calif.(30) K1 ..8.75
Gary,Ind. U5 .....7.95
Geneva,Utah C11 .....7.95
Houston S5 .....8.05
Ind.Harbor,Ind. I-2, Y1 .7.95
Johnstown,Pa. B2 .....7.95
Munhall,Pa. U5 .....7.95
Pittsburgh J5 .....7.95
Seattle B3 .....8.85
Sharon,Pa. S3 .....7.95
S.Chicago,Ill. U5, W14 ..7.95
SparrowsPoint,Md. B2 ..7.95
Warren,O. R2 .....7.95
Youngstown U5, Y1 .....7.95

PLATES, ALLOY
Aliquippa,Pa. J5 .....7.50
Claymont,Del. C22 .....7.50
Coatesville,Pa. L17 .....7.50
Economy,Pa. B14 .....7.50
Farrell,Pa. S3 .....7.50
Fontana,Calif. K1 .....8.30
Gary,Ind. U5 .....7.50
Houston S5 .....7.60
Ind.Harbor,Ind. Y1 .....7.50
Johnstown,Pa. B2 .....7.50
Lowellville,O. S3 .....7.50
Munhall,Pa. U5 .....7.50
Newport,Ky. A2 .....7.50
Pittsburgh J5 .....7.50
Seattle B3 .....8.40
Sharon,Pa. S3 .....7.50
S.Chicago,Ill. U4, W14 ..7.50
SparrowsPoint,Md. B2 ..7.50
Youngstown Y1 .....7.50

FLOOR PLATES
Cleveland J5 .....6.375
Conshohocken,Pa. A3 ..6.375
Ind.Harbor,Ind. I-2 ....6.375
Munhall,Pa. U5 .....6.375
Pittsburgh J5 .....6.375
S.Chicago,Ill. U5 .....6.375

PLATES, Ingot Iron
Ashland c.l.(15) A10 ..5.55
Ashland l.c.l.(15) A10 ..6.05
Cleveland c.l. R2 .....6.05
Warren,O. c.l. R2 .....6.05

BARS

BARS, Hot-Rolled Carbon (Merchant Quality)
Ala.City,Ala.(9) R2 ..5.675
Aliquippa,Pa.(9) J5 ..5.675
Alton,Ill. L1 .....5.875
Atlanta(9) A11 .....5.875
Bessemer,Ala.(9) T2 ..5.675
Birmingham(9) C15 ..5.675
Buffalo(9) R2 .....5.675
Canton,O.(23) R2 .....6.15
Clairton,Pa.(9) U5 ....5.675
Cleveland(9) R2 .....5.675
Ecorse,Mich.(9) G5 ...5.675
Emeryville,Calif. J7 ...6.425
Fairfield,Ala.(9) T2 ...5.675
Fairless,Pa.(9) U5 ....5.825
Fontana,Calif.(9) K1 ...6.375
Gary,Ind.(9) U5 .....5.675
Houston(9) S5 .....5.925
Ind.Harbor(9) I-2, Y1 .5.675
Johnstown,Pa.(9) B2 ...5.675
Joliet,Ill. P22 .....5.675
KansasCity,Mo.(9) S5 .5.925
Lackawanna(9) B2 ....5.675
LosAngeles(9) B3 .....6.375
Massillon,O. (23) R2 ...6.15
Midland,Pa.(23) C18 ...6.025
Milton,Pa. M18 .....5.825
Minnequa,Colo. C10 ....6.125
Niles,Calif. P1 .....6.375
N.T'wan'a,N.Y.(23)B11 6.025
Owensboro,Ky.(9) G8 ...6.025
Pittsburg,Calif.(9) C11 6.375
Pittsburgh(9) J5 .....5.675
Portland,Oreg. O4 .....6.425
Riverdale,Ill.(9) A1 .....5.675
Seattle B3, N14 .....6.425
S.Ch'c'go(9)R2,U5,W14 5.675
S.Duquesne,Pa.(9) U5 ..5.675
S.SanFran.,Calif.(9) B3 6.425
Sterling,Ill.(1)(9) N15 ..5.675
Sterling,Ill.(9) N15 ....5.775
Struthers,O.(9) Y1 .....5.675
Tonawanda,N.Y. B12 ....5.675
Torrance,Calif.(9) C11 6.375
Warren,O. C17 .....6.025
Youngstown(9) R2, U5 ..5.675

BARS, Hot-Rolled Alloy
Aliquippa,Pa. J5 .....6.725
Bethlehem,Pa. B2 .....6.725
Bridgeport,Conn. C32 ...6.80
Buffalo R2 .....6.725
Canton,O. R2, T7 .....6.725
Clairton,Pa. U5 .....6.725
Detroit S41 .....6.725
Economy,Pa. B14 .....6.725
Ecorse,Mich. G5 .....6.725
Fairless,Pa. U5 .....6.875
Farrell,Pa. S3 .....6.725
Fontana,Calif. K1 .....7.775
Gary,Ind. U5 .....6.725
Houston S5 .....6.975
Ind.Harbor,Ind. I-2, Y1 .6.725
Johnstown,Pa. B2 .....6.725
KansasCity,Mo. S5 .....6.975
Lackawanna,N.Y. B2 ..6.725
LosAngeles B3 .....7.775
Lowellville,O. S3 .....6.725
Massillon,O. R2 .....6.725
Midland,Pa. C18 .....6.725
Owensboro,Ky. G8 .....6.725
Pittsburgh J5 .....6.725
Sharon,Pa. S3 .....6.725
S.Chicago R2, U5, W14 6.725
S.Duquesne,Pa. U5 ....6.725
Struthers,O. Y1 .....6.725
Warren,O. C17 .....6.725
Youngstown U5 .....6.725

BARS & SMALL SHAPES, H.R. High-Strength, Low-Alloy
Aliquippa,Pa. J5 .....8.30
Bessemer,Ala. T2 .....8.30
Bethlehem,Pa. B2 .....8.30
Clairton,Pa. U5 .....8.30
Cleveland R2 .....8.30
Ecorse,Mich. G5 .....8.30
Fairfield,Ala. T2 .....8.30
Fontana,Calif. K1 .....9.00
Gary,Ind. U5 .....8.30
Houston S5 .....8.55
Ind.Harbor,Ind. Y1 ....8.30
Johnstown,Pa. B2 .....8.30
KansasCity,Mo. S5 ....8.55
Lackawanna,N.Y. B2 ..8.30
LosAngeles B3 .....9.00
Pittsburgh J5 .....8.30
Seattle B3 .....9.05
S.Chicago,Ill. R2, W14 ..8.30
S.Duquesne,Pa. U5 ....8.30
S.SanFrancisco B3 ....9.05
Struthers,O. Y1 .....8.30
Youngstown U5 .....8.30

BAR SIZE ANGLES; H.R. Carbon
Bethlehem,Pa.(9) B2 ..5.825
Houston(9) S5 .....5.925
KansasCity,Mo.(9) S5..5.925
Lackawanna(9) B2 ....5.675
Sterling,Ill. N15 .....5.775
Sterling,Ill.(1) N15 ...5.675
Tonawanda,N.Y. B12 ..5.675

BAR SIZE ANGLES; S. Shapes
Aliquippa,Pa. J5 .....5.675
Atlanta A11 .....5.875
Joliet,Ill. P22 .....5.675
Minnequa,Colo. C10 ....6.125
Niles,Calif. P1 .....6.375
Pittsburgh J5 .....5.675
Portland,Oreg. O4 ....6.425
SanFrancisco S7 .....6.52
Seattle B3 .....6.425

BAR SHAPES, Hot-Rolled Alloy
Aliquippa,Pa. J5 .....6.80
Clairton,Pa. U5 .....6.80
Gary,Ind. U5 .....6.80
Houston S5 .....7.05
KansasCity,Mo. S5 ....7.05
Pittsburgh J5 .....6.80
Youngstown U5 .....6.80

BARS, C.F. Leaded (Including leaded extra) Carbon
LosAngeles P2, S30 ..11.75*

Alloy
Ambridge,Pa. W18 ..10.175
BeaverFalls,Pa. M12 ..10.175
Camden,N.J. P13 .....10.35
Chicago W18 .....10.175
Elyria,O. W18 .....10.175
Monaca,Pa. S17 .....10.175
Newark,N.J. W18 .....10.35
SpringCity,Pa. K3 .....10.35

*Grade A; add 0.050c for Grade B.

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 .....7.65
BeaverFalls,Pa. M12,R2 .7.65
Birmingham C15 .....8.25
Buffalo B5 .....7.70
Camden,N.J. P13 .....8.10
Carnegie,Pa. C12 .....7.65
Chicago W18 .....7.65
Cleveland A7, C20 .....7.65
Detroit B5, P17 .....7.85
Detroit S41 .....7.65
Donora,Pa. A7 .....7.65
Elyria,O. W8 .....7.65
FranklinPark,Ill. N5 ...7.65
Gary,Ind. R2 .....7.65
GreenBay,Wis. F7 .....7.65
Hammond,Ind. J5, L2 ...7.65
Hartford,Conn. R2 .....8.15
Harvey,Ill. B5 .....7.65
LosAngeles(49) S30 .....9.10
LosAngeles(49) P2, R2 .9.10
Mansfield,Mass. B2 .....8.20
Massillon,O. R2, R8 ....7.65
Midland,Pa. C18 .....7.65
Monaca,Pa. S17 .....7.65
Newark,N.J. W18 .....8.10
NewCastle,Pa.(17) B4 ...7.65
Pittsburgh J5 .....7.65
Plymouth,Mich. P5 .....7.90
Putnam,Conn. W18 .....8.20
Readville,Mass. C14 .....8.20
S.Chicago,Ill. W14 .....7.65
SpringCity,Pa. K3 .....8.10
Struthers,O. Y1 .....7.65
Warren,O. C17 .....7.65
Waukegan,Ill. A7 .....7.65
Willimantic,Conn. J5 ...8.15
Youngstown F3, Y1 .....7.65

BARS, Cold-Finished Carbon (Turned and Ground)
Cumberland,Md. (5) C19 .6.55

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 .....9.025
BeaverFalls,Pa. M12,R2 9.025
Bethlehem,Pa. B2 .....9.025
Bridgeport,Conn. C32 ...9.175
Buffalo B5 .....9.025
Camden,N.J. P13 .....9.20
Canton,O. T7 .....9.025
Carnegie,Pa. C12 .....9.025
Chicago W18 .....9.025
Cleveland A7, C20 .....9.025
Detroit B5, P17 .....9.226
Detroit S41 .....9.025
Donora,Pa. A7 .....9.025
Elyria,O. W8 .....9.025
FranklinPark,Ill. N5 ...9.025
Gary,Ind. R2 .....9.025
GreenBay,Wis. F7 .....9.025
Hammond,Ind. J5, L2 ...9.025
Hartford,Conn. R2 .....9.325
Harvey,Ill. B5 .....9.025
Lackawanna,N.Y. B2 ...9.025
LosAngeles P2, S30 ...11.00
Mansfield,Mass. B5 .....9.325
Massillon,O. R2, R8 ....9.025
Midland,Pa. C18 .....9.025
Monaca,Pa. S17 .....9.025
Newark,N.J. W18 .....9.20
Plymouth,Mich. P5 .....9.225
S.Chicago,Ill. W14 .....9.025
SpringCity,Pa. K3 .....9.20
Struthers,O. Y1 .....9.025
Warren,O. C17 .....9.025
Waukegan,Ill. A7 .....9.025
Willimantic,Conn. J5 ...9.325
Worcester,Mass. A7 ....9.325
Youngstown F3, Y1 .....9.025

BARS, Reinforcing, Billet (To Fabricators)

AlabamaCity,Ala. R2 ..5.675
Atlanta A11 ..5.675
Birmingham C15 ..5.675
Buffalo R2 ..5.675
Cleveland R2 ..5.675
Ecorse,Mich. G5 ..5.675
Emeryville,Calif. J7 ..6.425
Fairfield,Ala. T2 ..5.675
Fairless,Pa. U5 ..5.825
Fontana,Calif. K1 ..6.375
Ft.Worth,Tex.(4)(26)T4 5.925
Gary,Ind. U5 ..5.675
Houston S5 ..5.925
Ind.Harbor,Ind. I-2, Y1 5.675
Johnstown,Pa. B2 ..5.675
Joliet,Ill. P22 ..5.675
KansasCity,Mo. S5 ..5.925
Kokomo,Ind. C16 ..5.775
Lackawanna,N.Y. B2 ..5.675
LosAngeles B3 ..6.375
Madison,Ill. L1 ..5.875
Milton,Pa. M18 ..5.825
Minnequa,Colo. C10 ..6.125
Niles,Calif. P1 ..6.375
Pittsburg,Calif. C11 ..6.375
Pittsburgh J5 ..5.675
Portland,Oreg. O1 ..6.425
SandSprings,Okla. S5 ..5.925
Seattle B3, N14 ..6.425
S.Chicago,Ill. R2, W14 5.675
S.Duquesne,Pa. U5 ..5.675
S.SanFrancisco B3 ..6.425
SparrowsPoint,Md. B2 ..5.675
Sterling,Ill.(1) N15 ..5.675
Sterling,Ill. N15 ..5.775
Struthers,O. Y1 ..5.675
Tonawanda,N.Y. B12 ..6.10
Torrance,Calif. C11 ..6.375
Youngstown R2, U5 ..5.675

BARS, Reinforcing, Billet (Fabricated to Consumers)

Baltimore B2 ..7.42
Boston B2, U8 ..8.15
Chicago U8 ..7.41
Cleveland U8 ..7.39
Houston S5 ..7.60
Johnstown,Pa. B2 ..7.33
KansasCity,Mo. S5 ..7.60
Lackawanna,N.Y. B2 ..7.35
Marion,O. P11 ..6.70
Newark,N.J. U8 ..7.80
Philadelphia U8 ..7.63
Pittsburgh J5, U8 ..7.35
SandSprings,Okla. S5 ..7.60
Seattle B3, N14 ..7.95
SparrowsPt.,Md. B2 ..7.33
St. Paul U8 ..8.17
Williamsport,Pa. S19 ..7.25

BARS, Wrought Iron

Economy,Pa.(S.R.)B14 11.90
Economy,Pa.(D.R.)B14 18.55
Economy(Staybolt)B14 19.00

BARS, Rail Steel

ChicagoHts.(3) C2, I-2..5.575
ChicagoHts.(4)(44) I-2..5.675
ChicagoHts.(4) C2 ..5.675
Franklin,Pa.(3) F5 ..5.575
Franklin,Pa.(4) F5 ..5.675
JerseyShore,Pa.(3) J8 ..5.55
Marion,O.(3) P11 ..5.575
Tonawanda(3) B12 ..5.575
Tonawanda(4) B12 ..6.10

SHEETS

SHEETS, Hot-Rolled Steel (18 Gage and Heavier)

AlabamaCity,Ala. R2 ..5.10
Allenport,Pa. P7 ..5.10
Aliquippa,Pa. J5 ..5.10
Ashland,Ky.(8) A10 ..5.10
Cleveland J5, R2 ..5.10
Conshohocken,Pa. A3 ..5.15
Detroit(8) M1 ..5.10
Ecorse,Mich. G5 ..5.10
Fairfield,Ala. T2 ..5.10
Fairless,Pa. U5 ..5.15
Farrell,Pa. S3 ..5.10
Fontana,Calif. K1 ..5.825
Gary,Ind. U5 ..5.10
Geneva,Utah C11 ..5.20
GraniteCity,Ill.(8) G4 ..5.20
Ind.Harbor,Ind. I-2, Y1 5.10
Irvin,Pa. U5 ..5.10
Lackawanna,N.Y. B2 ..5.10
Mansfield,O. E6 ..5.10
Munhall,Pa. U5 ..5.10
Newport,Ky. A2 ..5.10
Niles,O. M21, S3 ..5.10
Pittsburg,Calif. C11 ..5.80
Pittsburgh J5 ..5.10
Portsmouth,O. P12 ..5.10
Riverdale,Ill. A1 ..5.10
Sharon,Pa. S3 ..5.10
S.Chicago,Ill. U5, W14..5.10
SparrowsPoint,Md. B2 ..5.10
Steubenville,O. W10 ..5.10
Warren,O. R2 ..5.10
Weirton,W.Va. W6 ..5.10
Youngstown U5, Y1 ..5.10

SHEETS, H.R. (19 Ga. & Lighter)

Niles,O. M21, S3 ..6.275

SHEETS, H.R. Alloy

Gary,Ind. U5 ..8.40
Ind.Harbor,Ind. Y1 ..8.40
Irvin,Pa. U5 ..8.40
Munhall,Pa. U5 ..8.40
Newport,Ky. A2 ..8.40
Youngstown U5, Y1 ..8.40

SHEETS, H.R. (14 Ga. & Heavier) High-Strength, Low-Alloy

Aliquippa,Pa. J5 ..7.525
Ashland,Ky. A10 ..7.525
Cleveland J5, R2 ..7.525
Conshohocken,Pa. A3 ..7.575
Ecorse,Mich. G5 ..7.525
Fairfield,Ala. T2 ..7.525
Fairless,Pa. U5 ..7.975
Farrell,Pa. S3 ..7.525
Fontana,Calif. K1 ..8.25
Gary,Ind. U5 ..7.525
Ind.Harbor,Ind. I-2, Y1 7.525
Irvin,Pa. U5 ..7.525
Lackawanna(35) B2 ..7.525
Munhall,Pa. U5 ..7.525
Niles,O. S3 ..7.525
Pittsburgh J5 ..7.525
S.Chicago,Ill. U5, W14 7.525
Sharon,Pa. S3 ..7.525
SparrowsPoint(36) B2 ..7.525
Warren,O. R2 ..7.525
Weirton,W.Va. W6 ..7.525
Youngstown U5, Y1 ..7.525

SHEETS, Hot-Rolled Ingot Iron (18 Gage and Heavier)

Ashland,Ky.(8) A10 ..5.35
Cleveland R2 ..5.875
Warren,O. R2 ..5.875

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2 ..7.05
Middletown,O. A10 ..6.775
Warren,O. R2 ..7.05

SHEETS, Cold-Rolled Steel (Commercial Quality)

AlabamaCity,Ala. R2 ..6.275
Allenport,Pa. P7 ..6.275
Aliquippa,Pa. J5 ..6.275
Cleveland J5, R2 ..6.275
Conshohocken,Pa. A3 ..6.325
Detroit M1 ..6.275
Ecorse,Mich. G5 ..6.275
Fairfield,Ala. T2 ..6.275
Fairless,Pa. U5 ..6.325
Follansbee,W.Va. F4 ..6.275
Fontana,Calif. K1 ..7.40
Gary,Ind. U5 ..6.275
GraniteCity,Ill. G4 ..6.375
Ind.Harbor,Ind. I-2, Y1 6.275
Irvin,Pa. U5 ..6.275
Lackawanna,N.Y. B2 ..6.275
Mansfield,O. E6 ..6.275
Middletown,O. A10 ..6.275
Newport,Ky. A2 ..6.275
Pittsburg,Calif. C11 ..7.225
Pittsburgh J5 ..6.275
Portsmouth,O. P12 ..6.275
SparrowsPoint,Md. B2 ..6.275
Steubenville,O. W10 ..6.275
Warren,O. R2 ..6.275
Weirton,W.Va. W6 ..6.275
Yorkville,O. W10 ..6.275
Youngstown Y1 ..6.275

SHEETS, Cold-Rolled, High-Strength, Low-Alloy

Aliquippa,Pa. J5 ..9.275
Cleveland J5, R2 ..9.275
Ecorse,Mich. G5 ..9.275
Fairless,Pa. U5 ..9.325
Fontana,Calif. K1 ..10.40
Gary,Ind. U5 ..9.275
Ind.Harbor,Ind. I-2, Y1 9.275
Irvin,Pa. U5 ..9.275
Lackawanna(37) B2 ..9.275
Pittsburgh J5 ..9.275
SparrowsPoint(38) B2 ..9.275
Warren,O. R2 ..9.275
Weirton,W.Va. W6 ..9.275
Youngstown Y1 ..9.275

SHEETS, Culvert

	Cu Steel	Cu Fe
Ashland,Ky. A10	7.225	7.475
Canton,O. R2	7.225	7.75
Fairfield T2	7.225	7.475
Gary,Ind. U5	7.225	7.475
GraniteCity,Ill.G4	7.325	....
Ind.Harbor I-2	7.225	7.475
Irvin,Pa. U5	7.225	7.475
Kokomo,Ind. C16	7.325	....
MartinsFry. W10	7.225	7.475
Pitts.,Calif. C11	7.975	....
SparrowsPt. B2	7.225	....
Pittsburgh J5	7.225	....

SHEETS, Culvert—Pure Iron

Ind.Harbor,Ind. I-2 ..7.475

SHEETS, Galvanized Steel Hot-Dipped

AlabamaCity,Ala. R2 ..6.875‡
Ashland,Ky. A10 ..6.875†
Canton,O. R2 ..6.875‡
Dover,O. E6 ..6.875†
Fairfield,Ala. T2 ..6.875†
Gary,Ind. U5 ..6.875†
GraniteCity,Ill. G4 ..6.975*
Ind.Harbor,Ind. I-2 ..6.875†
Irvin,Pa. U5 ..6.875†
Kokomo,Ind. C16 ..6.975‡
MartinsFerry,O. W10 ..6.875*
Middletown,O. A10 ..6.875†
Pittsburg,Calif. C11 ..7.625*
Pittsburgh J5 ..6.875†
SparrowsPt.,Md. B2 ..6.875†
Warren,O. R2 ..6.875†
Weirton,W.Va. W6 ..6.875*

*Continuous and noncontinuous. †Continuous. ‡Noncontinuous.

SHEETS, Well Casing

Fontana,Calif. K1 ..7.325

SHEETS, Galvanized High-Strength, Low-Alloy

Irvin,Pa. U5 ..10.125
SparrowsPt.(39) B2 ..10.025
Pittsburgh J5 ..10.125

SHEETS, Galvannealed Steel

Canton,O. R2 ..7.275
Irvin,Pa. U5 ..7.275

SHEETS, Galvanized Ingot Iron (Hot-Dipped Continuous)

Ashland,Ky. A10 ..7.125
Middletown,O. A10 ..7.125

SHEETS, Electrogalvanized

Cleveland(28) R2 ..7.65
Niles,O.(28) R2 ..7.65
Youngstown J5 ..7.50
Weirton,W.Va. W6 ..7.50

SHEETS, Aluminum Coated

Butler,Pa. A10 (type 1) 9.525
Butler,Pa. A10 (type 2) 9.625

SHEETS, Enameling Iron

Ashland,Ky. A10 ..6.775
Cleveland R2 ..6.775
Fairfield,Ala. T2 ..6.775
Gary,Ind. U5 ..6.775
GraniteCity,Ill. G4 ..6.875
Ind.Harbor,Ind. I-2,Y1 6.775
Irvin,Pa. U5 ..6.775
Middletown,O. A10 ..6.775
Niles,O. M21, S3 ..6.775
Youngstown Y1 ..6.775

BLUED STOCK, 29 Gage

Dover,O. E6 ..8.70
Follansbee,W.Va. F4 ..8.70
Ind.Harbor,Ind. I-2 ..8.70
Mansfield,O. E6 ..8.70
Warren,O. R2 ..8.70
Yorkville,O. W10 ..8.70

SHEETS, Long Terne, Steel (Commercial Quality)

BeechBottom,W.Va.W10 7.225
Gary,Ind. U5 ..7.225
Mansfield,O. E6 ..7.225
Niles,O. M21, S3 ..7.225
Warren,O. R2 ..7.225
Weirton,W.Va. W6 ..7.225

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 ..7.625

Key To Producers

A1 Acme Steel Co.
A2 Acme-Newport Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A5 Alloy Metal Wire Div., H. K. Porter Co. Inc.
A6 American Shim Steel Co.
A7 American Steel & Wire Div., U. S. Steel Corp.
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B8 Braeburn Alloy Steel
B9 Brainard Steel Div., Sharon Steel Corp.
B10 E. & G. Brooke, Wickwire Spencer Steel Div., Colo. Fuel & Iron
B11 Buffalo Bolt Co., Div., Buffalo Eclipse Corp.
B12 Buffalo Steel Corp.
B14 A. M. Byers Co.
B15 J. Bishop & Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C15 Connors Steel Div., H. K. Porter Co. Inc.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Plant, Wickwire Spencer Steel Div., Colo. Fuel & Iron
C23 Charter Wire Inc.
C24 G. O. Carlson Inc.
C32 Carpenter Steel of N.Eng.

D2 Detroit Steel Corp.
D4 Disston Div., H. K. Porter Co. Inc.
D6 Driver-Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.

E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire-Reeves Steel Corp.
E10 Enamel Prod. & Plating

F2 Firth Sterling Inc.
F3 Fitzsimmons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.

G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.
G8 Green River Steel Corp.

H1 Hanna Furnace Corp.
H7 Helical Tube Co.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-6 Ivins Steel Tube Works
I-7 Indiana Steel & Wire Co.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L6 Lone-Star Steel Co.
L7 Lukens Steel Co.
L8 Leschen Wire Rope Div., H. K. Porter Co. Inc.

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M6 Mercer Pipe Div., Sawhill Tubular Products
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M14 McInnes Steel Co.
M16 Md. Fine & Special. Wire
M17 Metal Forming Corp.
M18 Milton Steel Div., Merritt-Chapman&Scott
M21 Mallory-Sharon Metals Corp.
M22 Mill Strip Products Co.

N1 National-Standard Co.
N2 National Supply Co.
N3 National Tube Div., U. S. Steel Corp.
N5 Nelsen Steel & Wire Co.
N6 New England High Carbon Wire Co.
N8 Newman-Crosby Steel
N14 Northwest. Steel Rolling Mills Inc.
N15 Northwestern S.&W. Co.
N20 Neville Ferro Alloy Co.

O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co., Sub. of Barium Steel Corp.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Div., Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., American Chain & Cable
P17 Plymouth Steel Corp.
P19 Pitts. Rolling Mills
P20 Prod. Steel Strip Corp.
P22 Phoenix Mfg. Co.
P24 Phil. Steel & Wire Corp.

R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R8 Reliance Div., Eaton Mfg.
R9 Rome Mfg. Co.
R10 Rodney Metals Inc.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Div., Armco Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simmons Saw & Steel Co.
S12 Spencer Wire Corp.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S17 Superior Drawn Steel Co.
S18 Superior Steel Div., Copperweld Steel Co.
S19 Sweet's Steel Co.
S20 Southern States Steel
S23 Superior Tube Co.
S25 Stainless Welded Prod.
S26 Specialty Wire Co. Inc.
S30 Sierra Drawn Steel Corp.
S40 Seneca Steel Service
S41 Stainless & Strip Div., J&L Steel Corp.
S12 Southern Elec. Steel Co.

T2 Tenn. Coal & Iron Div., U. S. Steel Corp.
T3 Tenn. Products & Chemical Corp.
T4 Texas Steel Co.
T5 Thomas Strip Div., Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad. & Stan. San.
T13 Tube Methods Inc.
T19 Techalloy Co. Inc.

U3 Union Wire Rope Corp.
U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry
U7 Ulbrich Stainless Steels
U8 U. S. Steel Supply Div., U. S. Steel Corp.

V2 Vanadium-Alloys Steel
V3 Vulcan-Kidd Steel Div., H. K. Porter Co.

W1 Wallace Barnes Steel Div. Associated Spring Corp.
W2 Wallingford Steel Corp.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W8 Western Automatic Machine Screw Co.
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.

Y1 Youngstown Sheet & Tube

STRIP

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2	5.10
Allenport,Pa. P7	5.10
Alton,Ill. L1	5.30
Ashland,Ky.(8) A10	5.10
Atlanta A11	5.10
Bessemer,Ala. T2	5.10
Birmingham C15	5.10
Buffalo(27) R2	5.10
Conshohocken,Pa. A3	5.15
Detroit M1	5.10
Ecorse,Mich. G5	5.10
Fairfield,Ala. T2	5.10
Farrell,Pa. S3	5.10
Fontana,Calif. K1	5.825
Gary,Ind. U5	5.10
Ind.Harbor,Ind. I-2, Y1	5.10
Johnstown,Pa.(25) B2	5.10
Lackaw'na,N.Y.(25) B2	5.10
LosAngeles(25) B3	5.85
LosAngeles C1	8.60
Minnequa,Colo. C10	6.20
Riverdale,Ill. A1	5.10
SanFrancisco S7	6.60
Seattle(25) B3	6.10
Seattle N14	6.60
Sharon,Pa. S3	5.10
S.Chicago W14	5.10
S.SanFrancisco(25) B3	5.85
SparrowsPoint,Md. B2	5.10
Torrance,Calif. C11	5.85
Warren,O. R2	5.10
Weirton,W.Va. W6	5.10
Youngstown U5	5.10

STRIP, Hot-Rolled Alloy

Carnegie,Pa. S18	8.40
Farrell,Pa. S3	8.40
Gary,Ind. U5	8.40
Houston S5	8.65
Ind.Harbor,Ind. Y1	8.40
KansasCity,Mo. S5	8.65
LosAngeles B3	9.60
Lowellville,O. S3	8.40
Newport,Ky. A2	8.40
Sharon,Pa. A2 S3	8.40
S.Chicago,Ill. W14	8.40
Youngs wn U5, Y1	8.40

STRIP, Hot-Rolled High-Strength, Low-Alloy

Ashland,Ky. A10	7.575
Bessemer,Ala. T2	7.575
Conshohocken,Pa. A3	7.575
Ecorse,Mich. G5	7.575
Fairfield,Ala. T2	7.575
Farrell,Pa. S3	7.575
Gary,Ind. U5	7.575
Ind.Harbor,Ind. I-2,Y1	7.575
Lackawanna,N.Y. B2	7.575
LosAngeles(25) B3	8.325
Seattle(25) B3	8.575
Sharon,Pa. S3	7.575
S.Chicago,Ill. W14	7.575
S.SanFrancisco(25) B3	8.325
SparrowsPoint,Md. B2	7.575
Warren,O. R2	7.575
Weirton,W.Va. W6	7.575
Youngstown U5, Y1	7.575

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10	5.35
Warren,O. R2	5.875

STRIP, Cold-Rolled Carbon

Anderson,Ind. G6	7.425
Baltimore T6	7.425
Boston T6	7.975
Buffalo S40	7.425
Cleveland A7, J5	7.425
Dearborn,Mich. S3	7.425
Detroit D2, M1, P20	7.425
Dover, O. G6	7.425
Evanston,Ill. M22	7.525
Farrell,Pa. S3	7.425
Follansbee,W.Va. F4	7.425
Fontana,Calif. K1	9.20
FranklinPark,Ill T6	7.525
Ind.Harbor,Ind. Y1	7.425
Indianapolis S41	7.575
LosAngeles C1, S41	9.30
McKeesport,Pa. E10	7.525
NewBedford,Mass. R10	7.875
NewBritain,Conn. S15	7.875
NewCastle,Pa. B4, E5	7.425
NewHaven,Conn. D2	7.875
NewKensington,Pa. A6	7.425
Pawtucket,R.I. R3	7.975
Pawtucket,R.I. N8	7.975
Philadelphia P24	7.875
Pittsburgh J5	7.425
Riverdale,Ill. A1	7.525
Rome,N.Y.(32) R6	7.425
Sharon,Pa. S3	7.425
Trenton,N.J.(31) R5	8.875
Wallingford,Conn. W2	7.875
Warren,O. R2, T5	7.425
Worcester,Mass. A7	7.975
Youngstown S41, Y1	7.425

STRIP, Cold-Rolled Alloy

Boston T6	15.90
Carnegie,Pa. S18	15.55
Cleveland A7	15.55
Dover,O. G6	15.55
Farrell,Pa. S3	15.55
FranklinPark,Ill. T6	15.55
Harrison,N.J. C18	15.55
Indianapolis S41	15.70
LosAngeles S41	17.75
Lowellville,O. S3	15.55
Pawtucket,R.I. N8	15.90
Riverdale,Ill. A1	15.55
Sharon,Pa. S3	15.55
Worcester,Mass. A7	15.85
Youngstown S41	15.55

STRIP, Cold-Rolled High-Strength, Low-Alloy

Cleveland A7	10.80
Dearborn,Mich. S3	10.80
Dover,O. G6	10.80
Farrell,Pa. S3	10.80
Ind.Harbor,Ind. Y1	10.80
Sharon,Pa. S3	10.80
Warren,O. R2	10.80

STRIP, Cold-Finished Spring Steel (Annealed)

	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Baltimore T6	9.50	10.70	12.90	15.90	18.85
Boston T6	9.50	10.70	12.90	15.90	18.85
Bristol,Conn. W1	...	10.70	12.90	16.10	19.30
Carnegie,Pa. S18	8.95	10.40	12.60	15.60	....
Cleveland A7	8.95	10.40	12.60	15.60	18.55
Dearborn,Mich. S3	9.06	10.50	12.70	....	....
Detroit D2	9.06	10.50	12.70	15.70	....
Dover,O. G6	8.95	10.40	12.60	15.60	18.55
Evanston,Ill. M22	8.95	10.40	12.60	15.60	....
Farrell,Pa. S3	8.95	10.40	12.60	15.60	18.55
Fostoria,O. S1	10.05	10.40	12.60	15.60	....
FranklinPark,Ill. T6	9.06	10.40	12.60	15.60	18.55
Harrison,N.J. C18	....	....	12.90	16.10	19.30
Indianapolis S41	9.10	10.55	12.60	15.60	18.55
LosAngeles C1	11.15	12.60	14.80	17.80	....
LosAngeles S41	11.15	12.60	14.80	....	....
NewBritain,Conn. S15	9.40	10.70	12.90	15.90	18.85
NewCastle,Pa. B4, E5	8.95	10.40	12.60	15.60	....
NewHaven,Conn D2	9.40	10.70	12.90	15.90	....
NewKensington,Pa. A6	8.95	10.40	12.60	15.60	....
New York W3	....	10.70	12.90	16.10	19.30
Pawtucket,R.I. N8	9.50	10.70	12.90	15.90	18.85
Riverdale,Ill. A1	9.06	10.40	12.60	15.60	18.55
Rome,N.Y.(32) R6	8.95	10.40	12.60	15.60	18.55
Sharon,Pa. S3	8.95	10.40	12.60	15.60	18.55
Trenton,N.J. R5	....	10.70	12.90	15.90	18.85
Wallingford,Conn. W2	9.40	10.70	12.90	15.90	18.75
Warren,O. T5	8.95	10.40	12.60	15.60	18.55
Worcester,Mass. A7, T6	9.50	10.70	12.90	15.90	18.85
Youngstown S41	8.95	10.40	12.60	15.60	18.55

Spring Steel (Tempered)

	Up to 0.80C	0.81-1.05C	1.06-1.35C
Bristol, Conn. W1	... ...	18.85	22.95	27.80
Buffalo W12	... ...	18.85	....	....
Fostoria,O. S1	... ...	19.05	22.15	....
FranklinPark,Ill. T6	... ...	19.20	23.30	28.15
Harrison,N.J. C18	... ...	18.85	22.95	27.80
New York W3	... ...	18.85	22.95	27.80
Palmer,Mass. W12	... ...	18.85	....	....
Trenton,N.J. R5	... ...	18.85	22.95	27.80
Worcester,Mass. A7, T6	... ...	18.85	22.95	27.80
Youngstown S41	... ...	19.20	23.30	28.15

TIN MILL PRODUCTS

TIN PLATE, Electrolytic (Base Box)

	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$9.10	$9.35	$9.75
Fairfield,Ala. T2	9.20	9.45	9.85
Fairless,Pa. U5	9.20	9.45	9.85
Fontana,Calif. K1	9.75	10.00	10.40
Gary,Ind. U5	9.10	9.35	9.75
GraniteCity,Ill. G4	9.20	9.45	9.60
IndianaHarbor,Ind. I-2, Y1	9.10	9.35	9.75
Irvin,Pa. U5	9.10	9.35	9.75
Niles,O. R2	9.10	9.35	9.75
Pittsburg,Calif. C11	9.75	10.00	10.40
SparrowsPoint,Md. B2	9.10	9.35	9.75
Yorkville,O. W10	9.10	9.35	9.75

ELECTROLYTIC TIN-COATED SHEET (20-27 Ga.; Dollars per 100 lb)

Aliquippa,Pa. J5	7.90	8.10	...
Niles,O. R2	7.90	8.10	8.30

TIN PLATE, American 1.25 lb / 1.50 lb

	1.25 lb	1.50 lb
Aliquippa,Pa.J5	$10.40	$10.65
Fairfield,Ala. T2	10.50	10.75
Fairless,Pa. U5..	10.50	10.75
Fontana,Calif.K1	11.05	11.30
Gary,Ind. U5 ..	10.40	10.65
Ind.Harb. Y1 ..	10.40	10.65
Pitts.,Calif. C11.	11.05	11.30
Sp.Pt.,Md. B2 ..	10.40	10.65
Weirton,W.Va.W6	10.40	10.65
Yorkville,O. W10	10.40	10.65

BLACK PLATE (Base Box)

Aliquippa,Pa. J5	$8.20
Fairfield,Ala. T2	8.30
Fairless,Pa. U5	8.30
Fontana,Calif. K1	8.85
Gary,Ind. U5	8.20
GraniteCity,Ill. G4	8.30
Ind.Harbor,Ind. I-2, Y1	8.20
Irvin,Pa. U5	8.20
Niles,O. R2	8.20
Pittsburg,Calif. C11	8.85
SparrowsPoint,Md. B2	8.25
Weirton,W.Va. W6	8.20
Yorkville,O. W10	8.20

HOLLOWARE ENAMELING Black Plate (29 Gage)

Aliquippa,Pa. J5	7.85
Gary,Ind. U5	7.85
GraniteCity,Ill. G4	7.95
Ind.Harbor,Ind. Y1	7.85
Irvin,Pa. U5	7.85
Yorkville,O. W10	7.85

MANUFACTURING TERNES (Special Coated, Base Box)

Gary,Ind. U5	$9.70
Irvin,Pa. U5	9.70

ROOFING SHORT TERNES (8 lb Coated, Base Box)

Gary,Ind. U5	$11.25

STRIP, Galvanized (Continuous)

Farrell,Pa. S3	7.50
Sharon,Pa. S3	7.50

TIGHT COOPERAGE HOOP

Atlanta A11	5.65
Farrell,Pa. S3	5.525
Riverdale,Ill. A1	5.675
Sharon,Pa. S3	5.525
Youngstown U5	5.525

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2	8.175

STRIP, C.R. Electrogalvanized

Cleveland A7	7.425*
Dover,O. G6	7.425*
Evanston,Ill. M22	7.525*
McKeesport,Pa. E10	7.50*
Riverdale,Ill. A1	7.525*
Warren,O. B9, S3, T5	7.425*
Worcester,Mass. A7	7.975
Youngstown S41	7.425*

*Plus galvanizing extras.

SILICON STEEL

C.R. COILS & CUT LENGTHS (22 Ga.)

Fully Processed (Semiprocessed ½c lower)	Field	Armature	Electric	Motor	Dynamo
BeechBottom,W.Va. W10	....	11.70	12.40	13.55	14.65
Brackenridge,Pa. A4	....	....	12.40	13.55	14.65
GraniteCity,Ill. G4	9.975*	11.30*	12.00*	13.15*	....
IndianaHarbor,Ind. I-2	9.875*	11.20*	11.90*	13.05*	....
Mansfield,O. E6	9.875*	11.70	12.40	13.55	14.65
Newport,Ky. A2	9.875	11.70*	12.40*	13.55*	14.65*
Niles,O. M21	9.875*	11.70	12.40	13.55	....
Vandergrift,Pa. U5	9.875*	11.70	12.40	13.55	14.65
Warren,O. R2	9.875*	11.70	12.40	13.55	14.65
Zanesville,O. A10	....	11.70†	12.40	13.55	14.65

	Stator
Vandergrift,Pa. U5	8.10
Mansfield,O. E6	8.10

SHEETS (22 Ga., coils & cut lengths)

Fully Processed (Semiprocessed ½c lower)	T-72	T-65	T-58	T-52
BeechBottom,W.Va. W10	15.70	16.30	16.80	17.85
Vandergrift,Pa. U5	15.70	16.30	16.80	17.85
Zanesville,O. A10	15.70	16.30	16.80	17.85

C.R. COILS & CUT LENGTHS (22 Ga.) — Grain Oriented

	T-100	T-90	T-80	T-73	T-66	T-72
Brackenridge,Pa. A4	....	18.10	19.70	20.20	20.70	15.70††
Butler,Pa. A10	....	....	19.70	20.20	20.70	....
Vandergrift,Pa. U5	17.10	18.10	19.70	20.20	20.70	15.70
Warren,O. R2	....	....	....	....	....	15.70‡

*Semiprocessed. †Fully processed only. ‡Coils, annealed, semiprocessed ½c lower. ††Coils only.

WIRE

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2	8.00
Aliquippa,Pa. J5	8.00
Alton,Ill. L1	8.20
Atlanta A1	8.00
Bartonville,Ill. K4	8.10
Buffalo W12	8.00
Chicago W13	8.00
Cleveland A7, C20	8.00
Crawfordsville,Ind. M8	8.10
Donora,Pa. A7	8.00
Duluth A7	8.00
Fairfield,Ala. T2	8.00
Fostoria,O.(24) S1	8.10
Houston S5	8.25
Jacksonville,Fla. M8	8.35
Johnstown,Pa. B2	8.00
Joliet,Ill. A7	8.00
KansasCity,Mo. S5	8.25
Kokomo,Ind. C16	8.10
LosAngeles B3	8.95
Minnequa,Colo. C10	8.25
Monessen,Pa. P7, P16	8.00
N.Tonawanda,N.Y. B11	8.00
Palmer,Mass. W12	8.30
Pittsburg,Calif. C11	8.95
Portsmouth,O. P12	8.00
Rankin,Pa. A7	8.00
S.Chicago,Ill. R2	8.00
S.SanFrancisco C10	8.95
SparrowsPoint, Md. B2	8.10
Sterling,Ill.(1) N15	8.00
Sterling,Ill. N15	8.10
Struthers,O. Y1	8.00
Waukegan,Ill. A7	8.00
Worcester,Mass. A7	8.30

WIRE, Cold Heading Carbon

Elyria,O. W8	8.90

WIRE, Gal'd., for ACSR

Bartonville,Ill. K4	12.65
Buffalo W12	13.40
Cleveland A7	12.65
Donora,Pa. A7	12.65
Duluth A7	12.65
Johnstown,Pa. B2	13.40
Minnequa,Colo. C10	12.775
Monessen,Pa. P7, P16	12.65
Muncie,Ind. I-7	13.60
NewHaven,Conn. A7	12.95
Palmer,Mass. W12	13.70
Pittsburg,Calif. C11	13.45
Portsmouth,O. P12	12.65
Roebling,N.J. R5	12.95
SparrowsPt.,Md. B2	13.50
Struthers,O. Y1	13.40
Trenton,N.J. A7	12.95
Waukegan,Ill. A7	12.65
Worcester,Mass. A7	12.95

WIRE, Upholstery Spring

Aliquippa,Pa. J5	9.75
Alton,Ill. L1	9.95
Buffalo W12	9.75
Cleveland A7	9.75
Donora,Pa. A7	9.75
Duluth A7	9.75
Johnstown,Pa. B2	9.75
KansasCity,Mo. S5	10.00
LosAngeles B3	10.70
Minnequa,Colo. C10	9.95
Monessen,Pa. P7, P16	9.75
NewHaven,Conn. A7	10.05
Palmer,Mass. W2	10.05
Pittsburg,Calif. C11	10.70
Portsmouth,O. P12	9.75
Roebling,N.J. R5	10.05
S.Chicago,Ill. R2	9.75
S.SanFrancisco C10	10.70
SparrowsPt.,Md. B2	9.95
Struthers,O. Y1	9.75
Trenton,N.J. A7	10.05
Waukegan,Ill. A7	9.75
Worcester,Mass. A7, J4, T6	10.05

WIRE, MB Spring, High-Carbon

Aliquippa,Pa. J5	9.75
Alton,Ill. L1	9.95
Bartonville,Ill. K4	9.85
Buffalo W12	9.75
Cleveland A7	9.75
Donora,Pa. A7	9.75
Duluth A7	9.75
Fostoria,O. S1	9.80
Johnstown,Pa. B2	9.75
KansasCity,Mo. S5	10.00
LosAngeles B3	10.70
Milbury,Mass.(12) N6	10.05
Minnequa,Colo. C10	9.95
Monessen,Pa. P7, P16	9.75
Muncie,Ind. I-7	9.95
Palmer,Mass. W12	10.05
Pittsburg,Calif. C11	10.70
Portsmouth,O. P12	9.75
Roebling,N.J. R5	10.05
S.Chicago,Ill. R2	9.75
S.SanFrancisco C10	10.70
SparrowsPt.,Md. B2	9.85
Struthers,O. Y1	9.75
Trenton,N.J. A7	10.05
Waukegan,Ill. A7	9.75
Worcester,Mass. A7, J4, T6	10.05

WIRE, Fine & Weaving(8" Coils)

Alton,Ill. L1	16.50
Bartonville,Ill. K4	16.40
Chicago W13	16.30
Cleveland A7	16.30
Crawfordsville,Ind. M8	16.40
Fostoria,O. S1	16.30
Houston S5	16.55
Jacksonville,Fla. M8	16.65
Johnstown,Pa. B2	16.30
KansasCity,Mo. S5	16.55
Kokomo,Ind. C16	16.30
Minnequa,Colo. C10	16.55
Monessen,Pa. P16	16.30
Muncie,Ind. I-7	16.50
Palmer,Mass. W12	16.60
S.SanFrancisco C10	17.15
Waukegan,Ill. A7	16.30
Worcester,Mass. A7, J6	16.60

WIRE, Tire Bead

Bartonville,Ill. K4	17.15
Monessen,Pa. P16	17.15
Roebling,N.J. R5	17.65

ROPE WIRE

	(A)
Bartonville,Ill. K4	13.45
Buffalo W12	13.45
Fostoria,O. S1	13.45
Johnstown,Pa. B2	13.45
Monessen,Pa. P7	13.45
Muncie,Ind. I-7	13.65
Palmer,Mass. W12	13.75
Portsmouth,O. P12	13.45
Roebling,N.J. R5	13.75
St.Louis L8	13.45
SparrowsPt.,Md. B2	13.55
Struthers,O. Y1	13.45
Worcester,Mass. J4	13.75

(A) Plow and Mild Plow; add 0.25c for Improved Plow

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	12.35
Baltimore T6	12.65
Boston T6	12.65
Buffalo W12	12.35
Chicago W13	12.45
Cleveland A7	12.35
Crawfordsville,Ind. M8	12.35
Dover,O. G6	12.35
Farrell,Pa. S3	11.65
Fostoria,O. S1	12.35
FranklinPark,Ill. T6	12.45
Kokomo,Ind. C16	12.35
Massillon,O. R8	12.35
Milwaukee C23	12.55
Monessen,Pa. P7, P16	12.35
Palmer,Mass. W12	12.65
Pawtucket,R.I. N8	11.95
Philadelphia P24	12.65
Riverdale,Ill. A1	12.45
Rome,N.Y. R6	12.35
Sharon,Pa. S3	12.35
Trenton,N.J. R5	12.65
Warren,O. B9	12.35
Worcester,Mass. A7, T6	12.65

NAILS, Stock

	Col.
AlabamaCity,Ala. R2	173
Aliquippa,Pa. J5	173
Atlanta A11	175
Bartonville,Ill. K4	175
Chicago W13	173
Cleveland A9	173
Crawfordsville,Ind. M8	175
Donora,Pa. A7	173
Duluth A7	173
Fairfield,Ala. T2	173
Houston S5	178
Jacksonville,Fla. M8	175
Johnstown,Pa. B2	173
Joliet,Ill. A7	173
KansasCity,Mo. S5	178
Kokomo,Ind. C16	175
Minnequa,Colo. C10	178
Monessen,Pa. P7	173
Pittsburg,Calif. C11	192
Rankin,Pa. A7	173
S.Chicago,Ill. R2	173
SparrowsPt.,Md. B2	175
Sterling,Ill. (7) N15	175
Worcester,Mass. A7	179

(To Wholesalers: per cwt)

Galveston,Tex. D7	$10.30

NAILS, Cut (100 lb keg)

To Dealers (33)

Wheeling,W.Va. W10	$9.80

POLISHED STAPLES

	Col.
AlabamaCity,Ala. R2	175
Aliquippa,Pa. J5	173
Atlanta A11	177
Bartonville,Ill. K4	177
Crawfordsville,Ind. M8	177
Donora,Pa. A7	173
Duluth A7	173
Fairfield,Ala. T2	173
Houston S5	180
Jacksonville,Fla. M8	177
Johnstown,Pa. B2	175
Joliet,Ill. A7	173
KansasCity,Mo. S5	180
Kokomo,Ind. C16	177
Minnequa,Colo. C10	180
Pittsburg,Calif. C11	194
Rankin,Pa. A7	173
S.Chicago,Ill. R2	175
SparrowsPt.,Md. B2	177
Sterling,Ill. (7) N15	175
Worcester,Mass. A7	181

TIE WIRE, Automatic Baler (14½ Ga.) (per 97 lb Net Box)

Coil No. 3150

AlabamaCity,Ala. R2	$10.26
Atlanta A11	10.36
Bartonville,Ill. K4	10.36
Buffalo W12	10.26
Chicago W13	10.26
Crawfordsville,Ind. M8	10.36
Donora,Pa. A7	10.26
Duluth A7	10.26
Fairfield,Ala. T2	10.26
Houston S5	10.51
Jacksonville,Fla. M8	10.36
Johnstown,Pa. B2	10.26
Joliet,Ill. A7	10.26
KansasCity,Mo. S5	10.51
Kokomo,Ind. C16	10.36
LosAngeles B3	11.05
Minnequa,Colo. C10	10.51
Pittsburg,Calif. C11	11.04
S.Chicago,Ill. R2	10.26
S.SanFrancisco C10	11.04
SparrowsPt.,Md. B2	10.36
Sterling,Ill. (37) N15	10.36

Coil No. 6500 Stand.

AlabamaCity,Ala. R2	$10.60
Atlanta A11	10.70
Bartonville,Ill. K4	10.70
Buffalo W12	10.60
Chicago W13	10.60
Crawfordsville,Ind. M8	10.70
Donora,Pa. A7	10.60
Duluth A7	10.60
Fairfield,Ala. T2	10.60
Houston S5	10.85
Jacksonville,Fla. M8	10.70
Johnstown,Pa. B2	10.60
Joliet,Ill. A7	10.60
KansasCity,Mo. S5	10.85
Kokomo,Ind. C16	10.70
LosAngeles B3	11.40
Minnequa,Colo. C10	10.85
Pittsburg,Calif. C11	11.40
S.Chicago,Ill. R2	10.60
S.SanFrancisco C10	11.40
SparrowsPt.,Md. B2	10.70
Sterling,Ill.(37) N15	10.70

Coil No. 6500 Interim

AlabamaCity,Ala. R2	$10.65
Atlanta A11	10.75
Bartonville,Ill. K4	10.75
Buffalo W12	10.65
Chicago W13	10.65
Crawfordsville,Ind. M8	10.75
Donora,Pa. A7	10.65
Duluth A7	10.65
Fairfield,Ala. T2	10.65
Houston S5	10.90
Jacksonville,Fla. M8	10.75
Johnstown,Pa. B2	10.65
Joliet,Ill. A7	10.65
KansasCity,Mo. S5	10.90
Kokomo,Ind. C16	10.75
LosAngeles B3	11.45
Minnequa,Colo. C10	10.90
Pittsburg,Calif. C11	11.45
S.Chicago,Ill. R2	10.65
S.SanFrancisco C10	11.45
SparrowsPt.,Md. B2	10.75
Sterling,Ill.(37) N15	10.75

BALE TIES, Single Loop

	Col.
AlabamaCity,Ala. R2	212
Atlanta A11	214
Bartonville,Ill. K4	214
Crawfordsville,Ind. M8	214
Donora,Pa. A7	212
Duluth A7	212
Fairfield,Ala. T2	212
Houston S5	217
Jacksonville,Fla. M8	214
Joliet,Ill. A7	212
KansasCity,Mo. S5	217
Kokomo,Ind. C16	214
Minnequa,Colo. C10	217
Pittsburg,Calif. C11	236
S.SanFrancisco C10	236
SparrowsPt.,Md. B2	214
Sterling,Ill.(7) N15	214

FENCE POSTS

Birmingham C15	177
ChicagoHts.,Ill. C2, I-2	177
Duluth A7	177
Franklin,Pa. F5	177
Johnstown,Pa. B2	177
Marion,O. P11	177
Minnequa,Colo. C10	182
Sterling, Ill.(1) N15	177
Tonawanda,N.Y. B12	177

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	193**
Aliquippa,Pa. J5	190§
Atlanta A11	198§
Bartonville,Ill. K4	198
Crawfordsville,Ind. M8	198
Donora,Pa. A7	193†
Duluth A7	193†
Fairfield,Ala. T2	193†
Houston S5	198**
Jacksonville,Fla. M8	198
Johnstown,Pa. B2	196§
Joliet,Ill. A7	193†
KansasCity,Mo. S5	198**
Kokomo,Ind. C16	195†
Minnequa,Colo. C10	198**
Monessen,Pa. P7	196§
Pittsburg,Calif. C11	213†
Rankin,Pa. A7	193†
S.Chicago,Ill. R2	193**
S.SanFrancisco C10	213*
SparrowsPoint,Md. B2	198§
Sterling,Ill.(7) N15	198††

WOVEN FENCE, 9-15 Ga.

	Col.
Ala.City,Ala. R2	187**
Aliq'ppa,Pa.9-11½ga.J5	190§
Atlanta A11	192§
Bartonville,Ill. K4	192
Crawfordsville,Ind. M8	192
Donora,Pa. A7	187†
Duluth A7	187†
Fairfield,Ala. T2	187†
Houston S5	192**
Jacksonville,Fla. M8	192
Johnstown,Pa.(43) B2	190§
Joliet,Ill. A7	187†
KansasCity,Mo. S5	192**
Kokomo,Ind. C16	189†
Minnequa,Colo. C10	192**
Pittsburg,Calif. C11	210†
Rankin,Pa. A7	187†
S.Chicago,Ill. R2	187**
Sterling,Ill.(7) N15	192††

WIRE (16 gage)	An'ld Stone	Galv. Stone
Ala.City,Ala. R2	17.85	19.40**
Aliq'ppa,Pa. J5	17.85	19.65
Bartonville K4	17.95	19.75
Cleveland A7	17.85	....
Craw'dsville M8	17.95	19.80‡‡
Fostoria,O. S1	18.35	19.90†
Houston S5	18.10	19.65**
Jacksonville M8	17.95	19.80‡‡
Johnstown B2	17.85	19.65§
Kan.City,Mo. S5	18.10	....
Kokomo C16	17.25	18.80†
Minnequa C10	18.10	19.65**
P'lm'r,Mass.W12	18.15	19.70†
Pitts. Calif. C11	18.20	19.75†
S.SanFran. C10	18.20	19.75**
Sterling(37) N15	17.25	19.05††
SparrowsPt. B2	17.95	19.75§
Waukegan A7	17.85	19.40†
Worcester A7	18.15	....

WIRE, Merchant Quality

(6 to 8 gage)	An'ld	Galv.
Ala.City,Ala.	R2	9.00 9.55**
Aliquippa J5	8.65	9.325†
Atlanta(48) A11	9.10	9.775§
Bartonville(48)	K4	9.10 9.775
Buffalo W12	9.00	9.55†
Cleveland A7	9.00	....
Crawfordsville M8	9.10	9.80‡‡
Donora,Pa. A7	9.00	9.55†
Duluth A7	9.00	9.55†
Fairfield T2	9.00	9.55†
Houston(48) S5	9.25	9.80**
Jack'ville,Fla. M8	9.10	9.80‡‡
Johnstown B2(48)	9.00	9.675§
Joliet,Ill. A7	9.00	9.55†
Kans.City(48)	S5	9.25 9.80**
Kokomo(48) C16	9.10	9.65†
LosAngeles B3	9.95	10.625§
Monessen (48)	P7	8.65 9.35§
Palmer,Mass.	W12	9.30 9.85†
Pitts.,Calif.	C11	9.95 10.50†
Rankin,Pa. A7	9.00	9.55†
S.Chicago R2	9.00	9.55**
S.SanFran. C10	9.95	10.50**
Spar'wsPt.(48)	B2	9.10 9.775§
Sterling(48)	N15	9.25 9.925††
St'ling(1)(48)	N15	9.15 9.825††
Struthers,O.	Y1	9.00 9.65†
Worcester,Mass.	A7	9.30 9.85†

Based on zinc price of: *13.50. †5c. §10c. ‡Less than 10c. ††10.50c. ‡‡11.00c. **Subject to zinc equalization extras.

FASTENERS

(Base discounts, shipments of one to four containers, per cent off list, f.o.b. mill)

BOLTS

Machine Bolts
Full Size Body (cut thread)
½ in. and smaller
3 in. and shorter ... 55.0
3¼ in. thru 6 in. .. 50.0
Longer than 6 in. .. 37.0
⅝ in., 3 in. & shorter 47.0
3¼ in. thru 6 in. .. 40.0
Longer than 6 in. .. 31.0
⅞ in. thru 1 in.:
6 in. and shorter .. 37.0
Longer than 6 in. .. 31.0
1⅛ in. and larger:
All lengths 31.0
Undersize Body (rolled thread)
½ in. and smaller:
3 in. and shorter .. 55.0
3¼ in. thru 6 in. .. 50.0

Carriage Bolts
Full Size Body (cut thread) & Undersize Body (rolled thread)
½ in. and smaller:
6 in. and shorter .. 48.0
Larger diameters and longer lengths 35.0

Lag, Plow, Tap, Blank, Step, Elevator, Tire, and Fitting Up Bolts
½ in. and smaller:
6 in. and shorter .. 48.0
Larger diameters and longer lengths 35.0

High Tensile Structural Bolts
(Reg. semifinished hex head bolts, heavy semifinished hex nuts. Bolts — High-carbon steel, heat treated. Spec. ASTM A-325, in bulk. Full keg quantity)
⅝ in. diam. 50.0
¾ in. diam. 47.0
⅞ and 1 in. diam... 43.0
1⅛ and 1¼ in. diam. 34.0

NUTS

(Keg or case quantity and over)

Square Nuts, Reg. & Heavy:
All sizes 56.0

(Full container)

Hex Nuts, Reg. & Heavy Hot Pressed & Cold Punched:
¾ in. and smaller.. 62.0
⅞ in. to 1½ in., incl. 56.0
1⅝ in. and larger.. 51.5

Hex Nuts, Semifinished, Heavy (Incl. Slotted):
¾ in. and smaller.. 62.0
⅞ in. to 1½ in., incl. 56.0
1⅝ in. and larger.. 51.5

Hex Nuts, Finished (Incl. Slotted and Castellated):
⅞ in. and smaller.. 65.0
1 in. to 1½ in., incl. 57.0
1⅝ in. and larger.. 51.5

Semifinished Hex Nuts, Reg. (Incl. Slotted):
⅝ in. and smaller.. 62.0
¾ in. to ⅞ in., incl. 65.0
1 in. to 1½ in., incl. 57.0
1⅝ in. and larger.. 51.5

CAP AND SETSCREWS

(Base discounts, packages, per cent off list, f.o.b. mill)

Hex Head Cap Screws, Coarse or Fine Thread, Bright:
6 in. and shorter:
⅝ in. and smaller.. 35.0
¾, ⅞, and 1 in. .. 16.0
Longer than 6 in.:
⅝ in. and smaller.. 3.0
¾, ⅞, and 1 in. ..+11.0

High Carbon, Heat Treated:
6 in. and shorter:
⅝ in. and smaller.. 20.0
¾, ⅞, and 1 in. ...+ 5.0
Longer than 6 in.:
⅝ in. and smaller..+19.0
¾, ⅞, and 1 in. ...+39.0

Flat Head Cap Screws:
⅜ in. and smaller, 6 in. and shorter ..+85.0

Setscrews, Square Head, Cup Point, Coarse Thread:
Through 1 in. diam.:
6 in. and shorter...+ 5.0
Longer than 6 in. ..+29.0

RIVETS

F.o.b. Cleveland and/or freight equalized with Pittsburgh, f.o.b. Chicago and/or freight equalized with Birmingham except where equalization is too great.
Structural ½ in. larger 12.85
⅝ in. and smaller by 6 in. and shorter: 15.0%.

PRESTRESSED STRAND

(High strength, stress relieved; 7 wire uncoated. Net prices per 1000 ft, 40,000 lb and over)

	Standard Diameter, Inches 1/4	5/16	3/8	7/16	1/2
Alton,Ill. L1	$32.15	$48.20	$61.55	$81.10	$105.65
Buffalo W12	28.95	43.40	55.40	73.00	95.10
Cleveland A7	*28.95*	*43.40*	*55.40*	*73.00*	
KansasCity,Mo. U3	32.15	48.20	61.55	81.10	105.65
Monessen,Pa. P16	32.15	48.20	61.55	81.10	105.65
NewHaven,Conn. A7	*28.95*	*43.40*	*55.40*	*73.00*	*95.10*
Pittsburg,Calif. CII		*43.40*	*55.40*	*73.00*	
Pueblo,Colo. W12	28.95	43.40	55.40	73.00	95.10
Roebling,N.J. R5	28.95	43.40	55.40	73.00	95.10
St.Louis L8	28.95	43.40	55.40	73.00	95.10
Waukegan,Ill. A7	*28.95*	*43.40*	*55.40*	*73.00*	*95.10*

RAILWAY MATERIALS

Rails	Standard No. 1	Standard No. 2	All No. 2	Tee Rails 60 lb Under
Bessemer,Pa. U5	5.75	5.65	....	6.725
Ensley,Ala. T2	5.75	5.65	....	6.725
Fairfield,Ala. T2	....	....	....	6.725
Gary,Ind. U5	5.75	5.65	....	....
Huntington,W.Va. C15	....	....	....	6.50
Johnstown,Pa. B2	....	....	....(16)	6.725
Lackawanna,N.Y. B2	5.75	5.65	....	6.725
Minnequa,Colo. C10	5.75	5.65	....	7.22
Steelton,Pa. B2	5.75	5.65	....	....
Williamsport,Pa. S19	....	....	....	6.725

TIE PLATES

Fairfield,Ala. T2	6.875
Gary,Ind. U5	6.875
Lackawanna,N.Y. B2	6.875
Minnequa,Colo. C10	7.025
Seattle B3	7.025
Steelton,Pa. B2	6.875
Torrance,Calif. C11	6.875

JOINT BARS

Bessemer,Pa. U5	7.25
Fairfield,Ala. T2	7.25
Joliet,Ill. U5	7.25
Lackawanna,N.Y. B2	7.25
Minnequa,Colo. C10	7.25
Steelton,Pa. B2	7.25

AXLES

Ind.Harbor,Ind. S13	9.125
Johnstown,Pa. B2	9.125

TRACK BOLTS, Untreated

Cleveland R2	15.35
KansasCity,Mo. S5	15.35
Lebanon,Pa. B2	15.35
Minnequa,Colo. C10	15.35
Pittsburgh P14	14.75
Seattle,B3	15.85

SCREW SPIKES

Lebanon,Pa. B2	15.10

STANDARD TRACK SPIKES

Fairfield,Ala. T2	9.75
Ind.Harbor,Ind. I-2,Y1	10.10
KansasCity,Mo. S5	10.10
Lebanon,Pa. B2	10.10
Minnequa,Colo. C10	10.10
Pittsburgh J5	10.10
Seattle B3	10.60
S.Chicago,Ill. R2	10.10
Struthers,O. Y1	10.10
Youngstown R2	10.10

Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) 1½ to under 1 7/16 in.; 1 7/16 to under 1 15/16 in., 6.70c; 1 15/16 to 8 in., inclusive, 7.05c.
(6) Chicago or Birm. base.
(7) Chicago base 2 cols. lower.
(8) 16 Ga. and heavier.
(9) Merchant quality; add 0.35c for special quality.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass., base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) ⅝" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(21) New Haven, Conn., base.
(22) Deld. San Francisco Bay area.
(23) Special quality.
(24) Deduct 0.05c, finer than 15 Ga.
(25) Bar mill bands.
(26) Deld. in mill zone, 6.295c.
(27) Bar mill sizes, shapes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; for universal mill add 0.45c.
(31) Widths over ⅝ in.; 7.375c, for widths ⅝ in. and under by 0.125 in. and thinner.
(32) Buffalo base.
(33) To jobbers, deduct 20c.
(34) 9.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) Chicago base, 10 points lower.
(38) 14 Ga. & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Mill lengths, f.o.b. mill; deld. in mill zone or within switching limits, 5.635c.
(43) 9 14½ Ga.
(44) To fabricators.
(48) 6-7 Ga.
(49) 3¼ in. and smaller rounds; 9.65c, over 3¼ in. and other

Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate.

	Basic	No. 2 Foundry	Malleable	Bessemer
Birmingham District				
Birmingham R2	62.00	62.50**	....	....
Birmingham U6	....	62.50**	68.50	....
Woodward,Ala. W15	62.50*	62.50**	66.50	....
Cincinnati, deld.	....	70.20	....	....
Buffalo District				
Buffalo H1, R2	66.00	66.50	67.00	67.50
N. Tonawanda,N.Y. T9	....	66.50	67.00	67.50
Tonawanda,N.Y. W12	66.00	66.50	67.00	67.50
Boston, deld.	77.29	77.79	78.29	....
Rochester,N.Y., deld.	69.02	69.52	70.02	....
Syracuse,N.Y., deld.	70.12	70.62	71.12	....
Chicago District				
Chicago I-3	66.00	66.50	66.50	67.00
S.Chicago,Ill. R2	66.00	66.50	66.50	67.00
S.Chicago,Ill. W14	66.00	....	66.50	67.00
Milwaukee, deld.	69.02	69.52	69.52	70.02
Muskegon,Mich., deld.	....	74.52	74.52	....
Cleveland District				
Cleveland R2, A7	66.00	66.50	66.50	67.00
Akron,Ohio, deld.	69.52	70.02	70.02	70.52
Mid-Atlantic District				
Birdsboro,Pa. B10	68.00	68.50	69.00	69.50
Chester,Pa. P4	68.00	68.50	69.00	....
Swedeland,Pa. A3	68.00	68.50	69.00	69.50
NewYork, deld.	....	75.50	76.00	....
Newark,N.J., deld.	72.69	73.19	73.69	74.19
Philadelphia, deld.	70.41	70.91	71.41	71.99
Troy,N.Y. R2	68.00	68.50	69.00	69.50
Pittsburgh District				
NevilleIsland,Pa. P6	66.00	66.50	66.50	67.00
Pittsburgh (N&S sides), Aliquippa, deld.	....	67.95	67.95	68.48
McKeesRocks,Pa., deld.	....	67.60	67.60	68.13
Lawrenceville,Homestead, Wilmerding,Monaca,Pa., deld.	....	68.26	68.26	68.79
Verona,Trafford,Pa., deld.	68.29	68.82	68.82	69.35
Brackenridge,Pa., deld.	68.80	69.10	69.10	69.63
Midland,Pa. C18	66.00	....	....	....
Youngstown District				
Hubbard,Ohio Y1	....	....	66.50	....
Sharpsville,Pa. S6	66.00	....	66.50	67.00
Youngstown Y1	....	....	66.50	....
Mansfield,Ohio, deld.	71.30	....	71.80	72.30

	Basic	No. 2 Foundry	Malleable	Bessemer
Duluth I-3	66.00	66.50	66.50	67.00
Erie,Pa. I-3	66.00	66.50	66.50	67.00
Everett,Mass. E1	67.50	68.00	68.50	....
Fontana,Calif. K1	75.00	75.50	....	....
Geneva,Utah C11	66.00	66.50	....	....
GraniteCity,Ill. G4	67.90	68.40	68.90	....
Ironton,Utah C11	66.00	66.50	....	....
Minnequa,Colo. C10	66.00	66.50	69.00	....
Rockwood,Tenn. T3	....	62.50‡	66.50	....
Toledo,Ohio I-3	66.00	66.50	66.50	67.00
Cincinnati, deld.	72.94	73.44	....	....

*Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.
**Phos. 0.70-0.90%; Phos. 0.30-0.69%, $63.50.
‡Phos. 0.50% up; Phos. 0.30-0.49, $63.50.

PIG IRON DIFFERENTIALS

Silicon: Add 75 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos. iron on which base is 1.75-2.00%.

Manganese: Add 50 cents per ton for each 0.25% manganese over 1% or portion thereof.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add $1 for each 0.50% silicon or portion thereof over the base grade within a range of 6.50 to 11.50%; starting with silicon over 11.50% and $1.50 per ton for each 0.50% silicon or portion thereof up to 14%; add $1 for each 0.50% Mn over 1%)

Jackson,Ohio I-3, J1	$78.00
Buffalo H1	79.25

ELECTRIC FURNACE SILVERY IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1.25 for each 0.50% Mn over 1%; $2 per gross ton premium for 0.045% max P)

CalvertCity,Ky. P15	$99.00
NiagaraFalls,N.Y. P15	99.00
Keokuk,Iowa Open-hearth & Fdry. $9 freight allowed K2	103.50
Keokuk,Iowa O.H. & Fdry. 12½ lb pigiets, 16% Si, max fr'gt allowed up to $9, K2	106.50

LOW PHOSPHORUS PIG IRON, Gross Ton

Lyles,Tenn. T3 (Phos. 0.035% max)	$73.00
Rockwood,Tenn. T3 (Phos. 0.035% max)	73.00
Troy,N.Y. R2 (Phos. 0.035% max)	73.00
Philadelphia, deld.	81.67
Cleveland A7 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Duluth I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
Erie,Pa. I-3 (Intermediate) (Phos. 0.036-0.075% max)	71.00
NevilleIsland,Pa. P6 (Intermediate) (Phos. 0.036-0.075% max)	71.00

Steel Service Center Products

Representative prices, per pound, subject to extras, f.o.b. warehouse. City delivery charges are 15 cents per 100 lb except: Denver, Moline, Norfolk, Richmond, Washington, 20 cents; Baltimore, Boston, Los Angeles, New York, Philadelphia, Portland, Spokane, San Francisco, 10 cents; Atlanta, Birmingham, Chattanooga, Houston, Seattle, no charge.

	SHEETS				STRIP	BARS			Standard Structural Shapes	PLATES	
	Hot-Rolled	Cold-Rolled	Galv. 10 Ga.†	Stainless Type 302	Hot-Rolled*	H.R. Rounds	C.F. Rds.‡	H.R. Alloy 4140††[3]		Carbon	Floor
Atlanta	8.59§	9.86§	10.13	....	8.91	9.39	13.24 #	....	9.40	9.29	11.21
Baltimore	8.55	9.25	9.99	....	9.05	9.45	11.85 #	15.48	9.55	9.00	10.50
Birmingham	8.18	9.45	10.46	....	8.51	8.99	....	....	9.00	8.89	10.99
Boston	9.31	10.40	11.39	53.50	9.73	10.11	13.39 #	15.71	10.01	10.02	11.85
Buffalo	8.40	9.60	10.85	55.98	8.75	9.15	11.45 #	15.40	9.25	9.20	10.75
Chattanooga	8.35	9.69	9.65	....	8.40	8.77	10.46	....	8.88	8.80	10.66
Chicago	8.25	9.45	10.90	53.00	8.51	8.99	9.15	15.05	9.00	8.89	10.20
Cincinnati	8.43	9.51	10.55	53.43	8.83	9.31	11.53 #	15.37	9.56	9.27	10.53
Cleveland	8.36	9.54	10.65	52.33	8.63	9.10	11.25 #	15.16	9.39	9.13	10.44
Dallas	8.80	9.30	....	....	8.85	8.80	....	....	8.75	9.15	10.40
Denver	9.40	11.84	12.94	....	9.43	9.80	11.19	....	9.84	9.76	11.08
Detroit	8.51	9.71	10.87	56.50	8.88	9.30	9.51	15.33	9.56	9.26	10.46
Erie, Pa.	8.20	9.45	9.95[10]	....	8.60	9.10	11.25	....	9.35	9.10	10.60
Houston	8.40	8.90	10.29	52.00	8.45	8.40	11.60	15.75	8.35	8.75	10.10
Jackson, Miss.	8.52	9.79	....	....	8.84	9.82	10.68	....	9.33	9.22	11.03
Los Angeles	8.70[2]	10.80[2]	12.15[2]	57.60	9.15	9.10[2]	12.95[2]	16.35	9.00[2]	9.10[2]	11.30[2]
Memphis, Tenn.	8.59	9.80	....	....	8.84	9.32	11.25 #	....	9.33	9.22	10.86
Milwaukee	8.39	9.59	10.64	....	8.65	9.13	9.39	15.19	9.22	9.03	10.34
Moline, Ill.	8.55	9.80	....	....	8.84	8.95	9.15	....	8.99	8.91	....
New York	8.87	10.13	11.10	53.08	9.64	9.99	13.25 #	15.59	9.74	9.77	11.05
Norfolk, Va.	8.40	....	....	....	9.10	9.10	12.00	....	9.40	8.85	10.35
Philadelphia	8.20	9.25	11.34	52.71	9.25	9.40	11.95 #	15.48	9.10	9.15	10.40**
Pittsburgh	8.35	9.55	10.90	52.00	8.61	8.99	11.25 #	15.05	9.00	8.89	10.20
Richmond, Va.	8.40	....	10.40	....	9.10	9.00	....	....	9.40	8.85	10.35
St. Louis	8.63	9.83	10.88	....	8.89	9.37	9.78	15.43	9.48	9.27	10.58
St. Paul	8.79	10.04	11.09	....	8.84	9.21	9.86	....	9.38	9.30	10.49
San Francisco	9.65	11.10	11.00	55.10	9.75	10.15	13.00	16.00	9.85	10.00	12.35
Seattle	10.30	11.55	12.50	56.52	10.25	10.50	14.70	16.80[2]	10.20	10.10	12.50
South'ton, Conn.	9.07	10.33	10.71	....	9.48	9.74	....	....	9.57	9.57	10.91
Spokane	10.35	11.55	12.55	57.38	10.80	11.05	14.70	16.80	10.25	10.15	13.05
Washington	9.15	....	....	....	9.65	10.05	12.50	....	10.15	9.60	11.10

*Prices do not include gage extras; †prices include gage and coating extras; ‡includes 35-cent bar quality extras; §42 in. and under; **¼ in. and heavier; ††as annealed; ‡‡¾ in. to 4 in. wide, inclusive; #net price. 1 in. round C-1018.

Base quantities, 2000 to 4999 lb except as noted; cold-finished bars, 2000 lb and over except in Seattle, 2000 to 3999 lb; stainless sheets, 8000 lb except in Chicago, New York, Boston, Seattle, 10,000 lb and in San Francisco, 2000 to 4999 lb; hot-rolled products on West Coast, 2000 to 9999 lb, except in Seattle, 30,000 lb and over; [2]—30,000 lb; [3]—1000 to 4999 lb; [5]—1000 to 1999 lb; [10]—2000 lb and over.

Pittsburgh Sale Pushes Scrap Higher

STEEL's composite on the prime grade advances 49 cents a ton to $39.66 as mill places order for substantial first quarter delivery tonnage. Market tone is stronger

Scrap Prices, Page 86

Pittsburgh—Prices on scrap have advanced $1 to $3 a ton here on the leading steelmaking grades. Some mill purchasing of No. 1 heavy melting is reported at $43 a ton, up $1.50 from the previous representative sale. Mills and brokers agree that any new purchases of sizable tonnages of No. 1 heavy melting would probably bring around $43. No. 2 heavy melting is also quoted higher, as are No. 2 bundles.

Chicago — A local mill bought small tonnages of No. 1 industrial heavy melting at $45 and No. 1 dealer bundles at $44, both up $1 a ton over what has been considered the market here. In another transaction, No. 2 bundles went for $25, or $5 below the prevailing price.

There is disagreement, however, as to whether these prices are representative of the market. Bearish factors overshadow bullish ones. Most important is the fact that scrap supply far exceeds demand.

The district steelmaking rate holds steady at 85 per cent of capacity and is not likely to rise much above that level. There are eight idle blast furnaces in the district.

Philadelphia — Prices are unchanged here, with trading dull over the holiday period. Some improvement is expected after the turn of the year. No. 1 heavy melting is quoted at $34, delivered.

New York—Brokers' buying prices are unchanged, except for a drop of $1 a ton on heavy breakable cast to $31-$32. Trading is slow, and little improvement is expected until after the holidays.

Cleveland—Except for shipments on old contracts, the market here and in the Valley is lifeless. Dealers anticipate some buying after the turn of the year, but principal interest at the moment centers on monthend closings on the auto lists. Bids on these are expected to set the market over coming weeks.

Buffalo—Dealers report their receipts have fallen off to practically nothing. They blame the cold weather and unattractive prices. There has been no change in the price structure since the start of the month.

Detroit—The market is quiet here with many yards closed down for an extended holiday weekend. Dealers and brokers anticipate more activity next week with the Chrysler strike settled. Heavier scrap generation may cause the market to slide off as monthend auto lists close. Prices are unchanged.

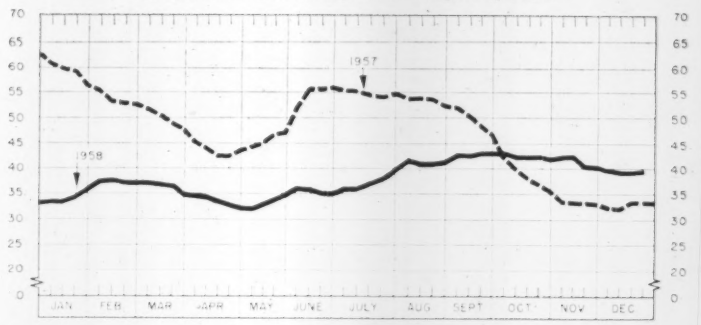
Cincinnati—The market appears stronger, and brokers have advanced their buying prices $1 a ton on the steelmaking grades. That brings No. 1 heavy melting to $37-$38. Area steelmakers are expected to enter the market for tonnage shortly.

St. Louis—The mills hold comfortable inventories and are interested in new buying. Brokers are not much interested in selling at

(Please turn to Page 91)

STEELMAKING SCRAP PRICE COMPOSITE

Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania—Compiled by STEEL.



Dec. 24 1958	Week Ago	Month Ago	Year Ago	Nov. Avg.
$39.66	$39.17	$40.33	$33.17	$41.42

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Iron and Steel Scrap

Consumer prices per gross ton, except as otherwise noted, including brokers' commission, as reported to STEEL, Dec. 24, 1958. *Changes shown in italics.*

STEELMAKING SCRAP COMPOSITE

Dec. 24	$39.66
Dec. 17	39.17
Nov. Avg.	41.42
Dec. 1957	32.77
Dec. 1953	36.99

Based on No. 1 heavy melting grade at Pittsburgh, Chicago, and eastern Pennsylvania.

PITTSBURGH

No. 1 heavy melting	*42.00-43.00*
No. 2 heavy melting	*35.00-36.00*
No. 1 dealer bundles	*43.00-44.00*
No. 2 bundles	*31.00-32.00*
No. 1 busheling	*42.00-43.00*
No. 1 factory bundles	46.00-47.00
Machine shop turnings	20.00-21.00
Mixed borings, turnings	20.00-21.00
Short shovel turnings	25.00-26.00
Cast iron borings	25.00-26.00
Cut structurals:	
2 ft and under	47.00-48.00
3 ft lengths	46.00-47.00
Heavy turnings	34.00-35.00
Punchings & plate scrap	47.00-48.00
Electric furnace bundles	47.00-48.00

Cast Iron Grades

No. 1 cupola	44.00-45.00
Stove plate	41.00-42.00
Unstripped motor blocks	31.00-32.00
Clean auto cast	39.00-40.00
Drop broken machinery	51.00-52.00

Railroad Scrap

No. 1 R.R. heavy melt.	44.00-45.00
Rails, 2 ft and under	56.00-57.00
Rails, 18 in. and under	57.00-58.00
Random rails	53.00-54.00
Railroad specialties	48.00-49.00
Angles, splice bars	48.00-49.00
Rails, rerolling	58.00-59.00

Stainless Steel Scrap

18-8 bundles & solids	225.00-230.00
18-8 turnings	125.00-130.00
430 bundles & solids	125.00-130.00
430 turnings	55.00-65.00

CHICAGO

No. 1 hvy melt, indus.	43.00-44.00
No. 1 heavy melt, dealer	*41.00-42.00*
No. 2 heavy melting	35.00-36.00
No. 1 factory bundles	46.00-47.00
No. 1 dealer bundles	42.00-43.00
No. 2 bundles	29.00-30.00
No. 1 busheling, indus.	43.00-44.00
No. 1 busheling, dealer	40.00-41.00
Machine shop turnings	21.00-22.00
Mixed borings, turnings	23.00-24.00
Short shovel turnings	23.00-24.00
Cast iron borings	23.00-24.00
Cut structurals, 3 ft	47.00-48.00
Punchings & plate scrap	48.00-49.00

Cast Iron Grades

No. 1 cupola	45.00-46.00
Stove plate	43.00-44.00
Unstripped motor blocks	37.00-38.00
Clean auto cast	52.00-53.00
Drop broken machinery	52.00-53.00

Railroad Scrap

No. 1 R.R. heavy melt	45.00-46.00
R.R. malleable	57.00-58.00
Rails, 2 ft and under	58.00-59.00
Rails, 18 in. and under	59.00-60.00
Angles, splice bars	54.00-55.00
Axles	69.00-70.00
Rails, rerolling	62.00-63.00

Stainless Steel Scrap

18-8 bundles & solids	215.00-220.00
18-8 turnings	115.00-120.00
430 bundles & solids	115.00-120.00
430 turnings	45.00-50.00

YOUNGSTOWN

No. 1 heavy melting	42.00-43.00
No. 2 heavy melting	29.00-30.00
No. 1 busheling	42.00-43.00
No. 1 bundles	42.00-43.00
No. 2 bundles	29.00-30.00
Machine shop turnings	15.00-16.00
Short shovel turnings	20.00-21.00
Cast iron borings	20.00-21.00
Low phos	43.00-44.00
Electric furnace bundles	43.00-44.00

Railroad Scrap

N. 1 R.R. heavy melt	44.00-45.00

CLEVELAND

No. 1 heavy melting	38.50-39.50
No. 2 heavy melting	25.00-26.00
No. 1 factory bundles	43.00-44.00
No. 1 bundles	38.50-39.50
No. 2 bundles	28.50-29.50
No. 1 busheling	38.50-39.50
Machine shop turnings	14.00-15.00
Short shovel turnings	20.00-21.00
Mixed borings, turnings	26.00-21.00
Cast iron borings	20.00-21.00
Cut foundry steel	39.00-40.00
Cut structurals, plates 2 ft and under	47.00-48.00
Low phos, punching & plate	40.00-41.00
Alloy free, short shovel turnings	22.00-23.00
Electric furnace bundles	39.00-40.00

Cast Iron Grades

No. 1 cupola	44.00-45.00
Charging box cast	37.00-38.00
Heavy breakable cast	36.00-37.00
Stove plate	43.00-44.00
Unstripped motor blocks	32.00-33.00
Brake shoes	36.00-37.00
Clean auto cast	49.00-50.00
Burnt cast	33.00-34.00
Drop broken machinery	49.00-50.00

Railroad Scrap

R.R. malleable	63.00-64.00
Rails, 2 ft and under	57.00-58.00
Rails, 18 in. and under	58.00-59.00
Rails, random lengths	52.00-53.00
Cast steel	49.00-50.00
Railroad specialties	50.00-51.00
Uncut tires	43.00-44.00
Angles, splice bars	50.00-51.00
Rails, rerolling	56.00-57.00

Stainless Steel

(Brokers' buying prices; f.o.b. shipping point)

18-8 bundles, solids	205.00-215.00
18-8 turnings	115.00-120.00
430 clips, bundles, solids	110.00-120.00
430 turnings	40.00-50.00

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	37.00
No. 2 heavy melting	35.00
No. 1 bundles	39.00
No. 2 bundles	27.00
No. 1 busheling	39.00
Machine shop turnings	18.50†
Short shovel turnings	20.50†

Cast Iron Grades

No. 1 cupola	48.00
Charging box cast	40.00
Heavy breakable cast	38.00
Unstripped motor blocks	39.00
Clean auto cast	48.00
Stove plate	44.00

Railroad Scrap

No. 1 R.R. heavy melt	44.00†
Rails, 18 in. and under	51.00†
Rails, random lengths	47.50
Rails, rerolling	59.50
Angles, splice bars	47.00

BIRMINGHAM

No. 1 heavy melting	35.00-36.00
No. 2 heavy melting	28.00-29.00
No. 1 bundles	35.00-36.00
No. 2 bundles	21.00-22.00
No. 1 busheling	35.00-36.00
Cast iron borings	13.00-14.00
Machine shop turnings	21.00-22.00
Short shovel turnings	22.00-23.00
Bars, crops and plates	42.00-43.00
Structurals & plates	41.00-42.00
Electric furnace bundles	37.00-38.00
Electric furnace:	
2 ft and under	36.00-37.00
3 ft and under	35.00-36.00

Cast Iron Grades

No. 1 cupola	53.00-54.00
Stove plate	52.00-53.00
Unstripped motor blocks	40.00-41.00
Charging box cast	29.00-30.00
No. 1 wheels	42.00-43.00

Railroad Scrap

No. 1 R.R. heavy melt.	37.00-39.00
Rails, 18 in. and under	49.00-50.00
Rails, rerolling	54.00-55.00
Rails, random lengths	44.00-45.00
Angles, splice bars	45.00-46.00

PHILADELPHIA

No. 1 heavy melting	34.00
No. 2 heavy melting	31.00
No. 1 bundles	35.00
No. 2 bundles	24.50
No. 1 busheling	34.00
Electric furnace bundles	37.00
Mixed borings, turnings	18.00†
Short shovel turnings	21.00-22.00
Machine shop turnings	18.00
Heavy turnings	30.00
Structurals & plate	39.00-40.00
Couplers, springs, wheels	42.00-43.00
Rails, crops, 2 ft & under	56.00-57.00

Cast Iron Grades

No. 1 cupola	39.00
Heavy breakable cast	41.00
Malleable	62.00
Drop broken machinery	48.00-49.00

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	27.00-28.00
No. 2 heavy melting	24.00-25.00
No. 1 bundles	27.00-28.00
No. 2 bundles	17.00-18.00
Machine shop turnings	9.00-10.00
Mixed borings, turnings	10.00-11.00
Short shovel turnings	13.00-14.00
Low phos. (structurals & plates)	33.00-34.00

Cast Iron Grades

No. 1 cupola	34.00-35.00
Unstripped motor blocks	23.00-24.00
Heavy breakable	*31.00-32.00*

Stainless Steel

18-8 sheets, clips, solids	185.00-190.00
18-8 borings, turnings	85.00-90.00
410 sheets, clips, solids	55.00-60.00
430 sheets, clips, solids	75.00-80.00

BUFFALO

No. 1 heavy melting	33.00-34.00
No. 2 heavy melting	27.00-28.00
No. 1 bundles	33.00-34.00
No. 2 bundles	25.00-26.00
No. 1 busheling	33.00-34.00
Mixed borings, turnings	17.00-18.00
Machine shop turnings	15.00-16.00
Short shovel turnings	19.00-20.00
Cast iron borings	17.00-18.00
Low phos. structurals and plate, 2 ft and under	42.00-43.00

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	44.00-45.00
No. 1 machinery	48.00-49.00

Railroad Scrap

Rails, random lengths	47.00-48.00
Rails, 3 ft and under	53.00-54.00
Railroad specialties	42.00-43.00

CINCINNATI

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	*37.00-38.00*
No. 2 heavy melting	*32.00-33.00*
No. 1 bundles	*37.00-38.00*
No. 2 bundles	*25.00-26.00*
No. 1 busheling	*37.00-38.00*
Machine shop turnings	*18.00-19.00*
Mixed borings, turnings	*19.00-20.00*
Short shovel turnings	*21.00-22.00*
Cast iron borings	*19.00-20.00*
Low phos., 18 in.	*46.00-47.00*

Cast Iron Grades

No. 1 cupola	45.00-46.00
Heavy breakable cast	38.00-39.00
Charging box cast	38.00-39.00
Drop broken machinery	47.00-48.00

Railroad Scrap

No. 1 R.R. heavy melt.	42.00-43.00
Rails, 18 in. and under	55.00-56.00
Rails, random lengths	49.00-50.00

HOUSTON

(Brokers' buying prices; f.o.b. cars)

No. 1 heavy melting	36.00†
No. 2 heavy melting	30.00†
No. 1 bundles	36.00†
No. 2 bundles	25.00†
Machine shop turnings	17.00
Short shovel turnings	20.00
Low phos. plates & structurals	44.00†

Cast Iron Grades

No. 1 cupola	43.00
Heavy breakable	27.00-28.00†
Foundry malleable	57.00
Unstripped motor blocks	33.00

Railroad Scrap

No. 1 R.R. heavy melt.	36.00†

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	25.00-26.00
No. 2 heavy melting	20.00-21.00
No. 1 bundles	25.00-26.00
No. 1 busheling	25.00-26.00
Machine shop turnings	7.00-8.00
Short shovel turnings	10.00-11.00
No. 1 cast	33.00
Mixed cupola cast	33.00
No. 1 machinery cast	34.00

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	34.00-35.00
No. 2 heavy melting	21.00-22.00
No. 1 bundles	35.00-36.00
No. 2 bundles	22.00-23.00
No. 1 busheling	34.00-35.00
Machine shop turnings	13.00-14.00
Mixed borings, turnings	14.00-15.00
Short shovel turnings	15.00-16.00
Punching & plate	37.00-38.00

Cast Iron Grades

No. 1 cupola	44.00-45.00
Stove plate	34.00-35.00
Charging box cast	34.00-35.00
Heavy breakable	35.00-36.00
Unstripped motor blocks	19.00-20.00
Clean auto cast	49.00-50.00

SEATTLE

No. 1 heavy melting	31.00
No. 2 heavy melting	29.00
No. 1 bundles	29.00
No. 2 bundles	23.00
Machine shop turnings	9.00-10.00†
Mixed borings, turnings	9.00-10.00†
Electric furnace No. 1	38.00†

Cast Iron Grades

No. 1 cupola	31.00†
Heavy breakable cast	28.00†
Unstripped motor blocks	23.00†
Stove plate (f.o.b. point)	21.00†

LOS ANGELES

No. 1 heavy melting	*$8.00*
No. 2 heavy melting	*$5.00*
No. 1 bundles	*$4.00*
No. 2 bundles	20.00
Machine shop turnings	*15.00*
Shoveling turnings	18.00
Cast iron borings	15.00
Cut structurals and plate 1 ft and under	*$8.00*

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	*$7.00*

Railroad Scrap

No. 1 R.R. heavy melt.	38.00

SAN FRANCISCO

No. 1 heavy melting	*$2.00-$4.00*
No. 2 heavy melting	*$0.00-$2.00*
No. 1 bundles	*$0.00-$2.00*
No. 2 bundles	22.00
Machine shop turnings	15.00
Mixed borings, turnings	15.00
Cast iron borings	15.00
Heavy turnings	15.00
Short shovel turnings	15.00
Cut structurals, 3 ft	40.00

Cast Iron Grades

No. 1 cupola	44.00
Charging box cast	34.00
Stove plate	34.00
Heavy breakable cast	28.00
Unstripped motor blocks	31.00
Clean auto cast	40.00
Drop broken machinery	40.00
No. 1 wheels	34.00

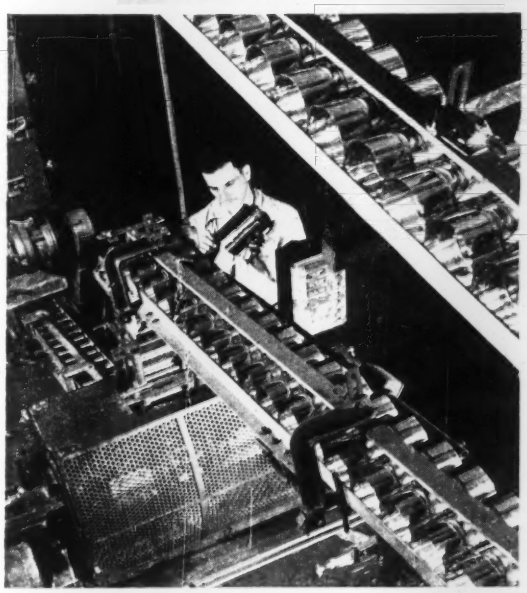
HAMILTON, ONT.*

No. 1 heavy melting	34.50
No. 2 heavy melting	30.50
No. 1 bundles	34.50
No. 2 bundles	25.00
Mixed steel scrap	26.50
Mixed borings, turnings	15.00
Busheling, new factory:	
Prepared	34.50
Unprepared	28.50
Short steel turnings	19.00

Cast Iron Grades

No. 1 machinery cast	39.00-41.00

*Brokers' buying prices. Nominal.
†F.o.b. Hamilton, Ont.



IBM improves its paint finishing using sprayed textured vinyl

Unichrome Coating 6400, a new, spray applied, textured vinyl finish, has greatly improved the quality of machine covers for IBM's Data Processing equipment. It provides much longer life in service due to its increased scratch and mar resistance. Rejects from in-transit damage and material handling have been sharply reduced. Savings, particularly in refinishing, have been accomplished by these improved physical properties.

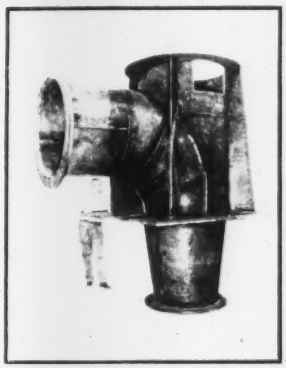
Available in a variety of colors, Unichrome Coating 6400 delivers a handsome leather-like finish with less complications and cost than obtained by use of laminated vinyl.

Films range from 8 to 20 mils in thickness and will outwear ordinary textured enamels by 10 to 1. Send for bulletin.

Tin cuts costs and contamination

Steel manufacturers each year produce enough "tin strip"—sheet steel continuously plated with a thin coating of tin—to provide 40 billion cans. The food industry alone spends some $45 million for the familiar containers. Why *tin?* It's one of the few practical metals that's non-toxic and a corrosion preventive. Most of the tin plate produced in this country is plated at high speed and low cost with anhydrous stannous chloride, a unique plating chemical developed by Metal & Thermit, first name in tin and tin chemicals.

Photo courtesy of American Can Company



Welded pump elbow handles 2,000,000 gals. an hour

For such high capacity and big as it is, this pump section has to be dependably strong. That's why Murex electrodes were used exclusively in welding the half-inch thick plates. These electrodes produce uniform welds free of porosity—even over any possible gaps in the fit-up—with more than enough strength for the tremendous hydraulic forces the pump will develop. Built by Viking Metal Fabricators, Inc., this elbow section stands 10 feet high, has a 42-inch O.D. Bulletin ESC describes M&T welding line.

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Lead-Zinc Meeting Slated

World users and producers plan third parley in early '59. Subject: International controls to stabilize both metals. Chances for agreement: Little better than 50-50

Nonferrous Metal Prices, Pages 90 & 91

MAJOR lead and zinc producing and consuming nations, by a spectacular lack of success at meetings in London and Geneva earlier this year, are readying for another try to work out some type of multilateral agreement to solve the metals' long range problems. Look for a third parley in New York early next year—probably sometime in March, says Clarence W. Nichols, deputy director of the State Department's Office of International Resources.

• **Purpose**—Mr. Nichols told the National Association of Waste Material Dealers the ultimate objective is to find a common meeting ground for solutions to such worldwide problems as overproduction and price gyrations.

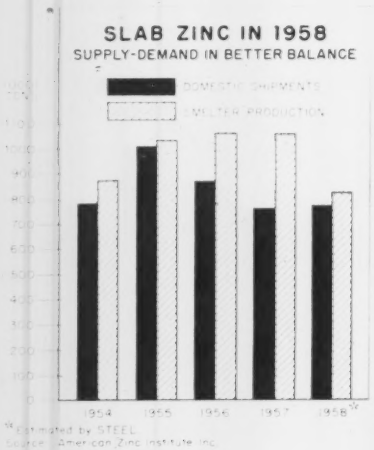
Mr. Nichols points out one serious shortcoming is a lack of worldwide statistical information on lead and zinc. This is particularly true when you're talking about stocks, consumption, and secondary output. For example, at the Geneva meeting, delegates readily agreed that world production exceeds consumption. It was a different story when it came to how much. Best guess: Surplusses of 200,000 tons for each metal.

• **What U. S. Wants**—While the U. S. government officially opposes commodity agreements, it would like to see some sort of effort made to: 1. Achieve reasonable price stability. 2. Develop more orderly marketing practices for the metal on a worldwide basis.

Many observers believe the U. S. has done its part, and it's now up to other nations to devise some sort of plan to stabilize prices and production.

Another group takes the attitude that lead and zinc aren't expanding at the rate of many other metals and that the solution lies in the higher cost producers giving way to newer mines and lower cost producing nations.

• **Objection to Quotas** — Still another viewpoint is that the U. S. has not been willing to accept its share of the "adjustment" market. Translated, this complaint boils down to the fact that these nations simply don't like our quota restrictions which limit imports of the two metals into the U. S. The U. S. justifies its position by pointing out world excesses of both metals have been concentrated into shipments to this country. Quotas, says Mr. Nichols, eliminate "dumping" but still allow heavy imports.



Complaints that the U. S. hasn't tried to stabilize market conditions simply aren't justified. Here's why: Statistics compiled by the American Zinc Institute Inc. show U. S. slab zinc output was 1,031,018 tons in 1955; 1,062,954 in 1956; and 1,057,450 in 1957. This year domestic output will drop to around 818,000 tons (see chart) because of voluntary cuts by producers. Lead has been reduced in like manner.

• **Agreement Unlikely** — The conflicting viewpoints make it difficult to get 30-odd nations to agree to any one course of action. A multilateral agreement has only a little better than a 50-50 chance, believes Mr. Nichols.

One reason is the sales upturn of the last few months in both metals, especially zinc. Domestic shipments of slab zinc should hit around 776,000 tons this year, compared with 765,127 tons in 1957.

• **Possibilities** — In the unlikely event an international agreement could be reached in March, quotas would undoubtedly be dropped. But until the producing nations get together or business improves enough to use world production, some type of controls will stay in effect. It may be some revisions will be made to present legislation. Another possibility: You may see some additional escape clause action if imports of lead and zinc products are stepped up. (They're not covered under quota restrictions.)

NONFERROUS PRICE RECORD

	Price Dec. 23	Last Change	Previous Price	Nov. Avg	Oct. Avg	Dec., 1957 Avg
Aluminum	24.70	Aug. 1, 1958	24.00	24.700	24.700	26.000
Copper	29.00	Dec. 22, 1958	28.75-29.00	29.415	28.058	26.130
Lead	12.80	Oct. 14, 1958	12.30	12.800	12.473	13.300
Magnesium	35.25	Aug. 13, 1956	33.75	35.250	35.250	35.250
Nickel	74.00	Dec. 6, 1956	64.50	74.000	74.000	74.000
Tin	99.00	Dec. 17, 1958	98.875	99.034	96.500	92.395
Zinc	11.50	Nov. 7, 1958	11.00	11.388	10.865	10.000

Quotations in cents per pound based on: COPPER, mean of primary and secondary, deld. Conn. Valley; LEAD, common grade, deld. St. Louis; ZINC, prime western, E. St. Louis; TIN, Straits, deld. New York; NICKEL, electrolytic cathodes, 99.9%, base size at refinery, unpacked; ALUMINUM, primary pig, 99.5+%, f.o.b. shipping point; MAGNESIUM, pig, 99.8%, Velasco, Tex.

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Use IMMUNOL, the neutral, non-toxic, non-flammable, odorless solvent to improve your metalworking operations. This widely used product eliminates the fire hazard, is inexpensive and odorless. It is available in several grades to be mixed with water for:

Rustproofing
to protect cast iron and other ferrous metals against rust for long or short periods of time.

Cleaning
to quickly clean oil, grease, soil and dirt from any metal surface from small parts to heavy machinery.

Cleaning and Rustproofing
to leave a protective rustproof surface as it cleans, so minute it cannot be seen or felt.

Magnetic Inspection
to replace kerosene or mineral spirits and safely reduce costs, speed production, improve definition.

Adding to Soluble Oils
a 1:50 mixture gives cooler work, better tool life, better finishes, additional rust protection.

Buffing
to insure swift and complete removal in cleaning.

Plating
to remove all surface residues in preparation for plating and as an additive to final rinses.

Honing
to aid in heat convection and release stone dust.

Cutting
to increase penetration, lower surface tension, insure cooler work, better finishes.

Grinding
to increase heat convection of coolant, wet out metallic silt and wheel dust.

Tumbling
to shorten the cycle, insure cleaner, rustproofed work.

Degreasing
to reduce costs, improve results, eliminate dermatitis and other hazards.

Solvent Replacement
to remove cutting oils from machined parts, at lower costs, without hazards.

Hydrostatic Testing
to give water clear, rustproof solutions.

Quenching
to prevent rusting of tank and metals quenched.

Rustproofing Internal Systems
one part to 2500 parts plain water, prevents rusting.

Dispersing Silt
to facilitate cutting and grinding operations by dispersing and sinking metallic silt particles.

Heat Convection
to increase the convection property of plain water used for cooling, frictional heat or quenching.

Lowering Surface Tension
to insure faster penetration of liquids.

Emulsifying Fats
to carry them off and clean the receptacle.

Sealing Aluminum
after anodizing to produce a mirror-like finish, seal the pores of the metal and make it more resistant to contamination.

Replacing Vapor Degreasing
to clean better, rustproof the metal, eliminate odors, skin irritations, the dangers of fire.

Write for this free booklet. It describes in detail the many outstanding results users have obtained with IMMUNOL.

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Nonferrous Metals

Cents per pound, carlots except as otherwise noted.

PRIMARY METALS AND ALLOYS

Aluminum: 99.5%, pigs, 24.70; ingots, 26.80, 30,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 28.60; No. 43, 28.40; No. 195, 29.40; No. 214, 30.20; No. 356, 28.60; 30 or 40 lb ingots.

Antimony: R.M.M. brand, 99.5%, 29.00; Lone Star brand, 29.50, f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 24.50-25.00, New York, duty paid, 10,000 lb or more.

Beryllium: 97% lump or beads, $71.50 per lb, f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $74.75 per lb of contained Be, with balance as Al at market price, f.o.b. shipping point.

Beryllium Copper: 3.75-4.75% Be, $43 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. shipping point.

Bismuth: $2.25 per lb, ton lots.

Cadmium: Sticks and bars, $1.45 per lb deld.

Cobalt: 97.99%, $2.00 per lb for 550-lb keg; $2.02 per lb for 100 lb case; $2.07 per lb under 100 lb.

Columbium: Powder, $55-85 per lb, nom.

Copper: Electrolytic, 29.00 deld.; custom smelters, 29.00; lake, 29.00 deld.; fire refined, 28.75 deld.

Germanium: First reduction, $179.17-197.31 per lb; intrinsic grade, $197.31-220 per lb, depending on quantity.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $70-80 nom. per troy oz.

Lead: Common, 12.80; chemical, 12.90; corroding, 12.90, St. Louis. New York basis, add 0.20.

Lithium: 98 + %, 50-100 lb, cups or ingots, $12; rod, $15; shot or wire, $16. 100-500 lb, cups or ingots, $10.50; rod, $14; shot or wire, $15, f.o.b. Minneapolis.

Magnesium: Pig, 35.25; ingot, 36.00 f.o.b. Velasco, Tex.; 12 in. sticks, 59.00 f.o.b. Madison, Ill.

Magnesium Alloys: AZ91A (diecasting), 40.75 deld.; AZ63A, AZ92A, 9Z91C (sand casting), 40.75, f.o.b. Velasco, Tex.

Mercury: Open market, spot, New York, $221-224 per 76-lb flask.

Molybdenum: Unalloyed, turned extrusion, 3.75-5.75 in. round, $9.60 per lb in lots of 2500 lb or more, f.o.b. Detroit.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked, 74.00; 10-lb pigs, unpacked, 78.25; "XX" nickel shot, 79.50; "F" nickel shot for addition to cast iron, 74.50; "F" nickel, 5 lb ingots in kegs for addition to cast iron, 75.50. Prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 1.01. Nickel oxide sinter at Buffalo, New York, or other established U. S. points of entry, contained nickel, 69.60.

Osmium: $70-100 per troy oz nom.

Palladium: $15-17 per troy oz.

Platinum: $52-55 per troy oz from refineries.

Radium: $16-21.50 per mg radium content, depending on quantity.

Rhodium: $118-125 per troy oz.

Ruthenium: $45-55 per troy oz.

Selenium: $7.00 per lb, commercial grade.

Silver: Open market, 89.875 per troy oz.

Sodium: 17.00 c.l.; 19.00-19.50 l.c.l.

Tantalum: Rod, $60 per lb; sheet, $55 per lb.

Tellurium: $1.65-1.85 per lb.

Thallium: $7.50 per lb.

Tin: Straits, N. Y., spot and prompt, 99.00.

Titanium: Sponge, 99.3 + % grade A-1, ductile (0.3% Fe max.), $1.62-1.82; grade A-2 (0.5% Fe max.),$1.70 per lb.

Tungsten: Powder, 89.8%, carbon reduced, 1000-lb lots, $3.15 per lb nom., f.o.b. shipping point; less than 1000 lb, add 15.00; 99 + % hydrogen reduced, $3.30-3.80.

Zinc: Prime Western, 11.50; brass special, 11.75; intermediate, 12.00, East St. Louis, freight allowed over 0.50 per lb. New York basis, add 0.50. High grade, 12.50; special high grade, 12.75 deld. Diecasting alloy ingot No. 3, 14.00; No. 2, 14.25; No. 5, 14.50 deld.

Zirconium: Reactor grade sponge, 100 lb or less, $7 per lb; 100-500 lb, $6.50 per lb; over 500 lb, $6 per lb.

(Note: Chromium, manganese, and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston alloys, 23.875-25.25; No. 12 foundry alloy (No. 2 grade), 21.75-22.00; 5% silicon alloy, 0.60 Cu max., 24.75-25.00; 13 alloy 0.60 Cu max., 24.75-25.00; 195 alloy, 25.25-26.00; 108 alloy, 22.25-22.50. Steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 23.50; grade 2, 22.00; grade 3, 21.00; grade 4, 19.00.

Brass Ingot: Red brass, No. 115, 28.00; tin bronze, No. 225, 37.50; No. 245, 32.25; high-leaded tin bronze, No. 305, 32.25; No. 1 yellow, No. 405, 23.00; manganese bronze, No. 421, 24.75.

Magnesium Alloy Ingot: AZ63A, 37.50; AZ91B, 37.50; AZ91C, 41.25; AZ92A, 37.50.

NONFERROUS PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras, 2000 to 5000 lb; nom. 1.9% Be alloy.) Strip, $1.885, f.o.b. Temple, Pa., or Reading, Pa.; rod, bar, wire, $1.865, f.o.b. Temple, Pa.

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 20,000-lb lots, 34.35; l.c.l., 34.98. Weatherproof, 20,000-lb lots, 35.54; l.c.l., 36.29.

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more, $18.50 per cwt; pipe, full coils, $18.50 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill.) Sheets and strip, $8.50-15.95; sheared mill plate, $6.00-9.50; wire, $6.50-10.50; forging billets, $3.80-4.35; hot-rolled and forged bars, $5.10-6.25.

ZINC

(Prices per lb, c.l., f.o.b. mill.) Sheets, 26.00; ribbon zinc in coils, 21.50; plates, 20.00.

ZIRCONIUM

Plate, $12.50-19.20; H.R. strip, $12.50-22.90; C.R. strip, $15.90-31.25; forged or H.R. bars, $11.00-17.40.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheets, C.R.	126	106	128
Strip, C.R.	124	108	138
Plate, H.R.	120	105	121
Rod, Shapes, H. R.	107	89	109
Seamless Tubes	157	129	200

ALUMINUM

Sheets: 1100, 3003, and 5005 mill finish (30,000 lb base; freight allowed).

Thickness Range, Inches	Flat Sheet	Coiled Sheet
0.250-0.136	42.80-47.30	.....
0.136-0.096	43.20-48.30	.....
0.126-0.103	.....	39.20-39.80
0.096-0.077	43.80-50.00	39.30-40.00
0.077-0.068	44.30-52.20	.....
0.077-0.061	.....	39.50-40.70
0.068-0.061	44.30-52.20	.....
0.061-0.048	44.90-54.40	40.10-41.80
0.048-0.038	45.40-57.10	40.60-43.20
0.038-0.030	45.70-62.00	41.00-45.70
0.030-0.024	46.20-53.70	41.30-45.70
0.024-0.019	46.90-56.80	42.40-44.10
0.019-0.017	47.70-54.10	43.00-44.70
0.017-0.015	48.60-55.00	43.80-45.50
0.015-0.014	49.60	44.80-46.50
0.014-0.012	50.80	45.50
0.012-0.011	51.80	46.70
0.011-0.0095	53.50	48.10
0.0095-0.0085	54.60	49.60
0.0085-0.0075	56.20	50.80
0.0075-0.007	57.70	52.30
0.007-0.006	59.30	53.70

ALUMINUM (continued)

Plates and Circles: Thickness 0.250-3 in. 24-60 in. width or diam., 72-240 in. lengths.

Alloy	Plate Base	Circle Base
1100-F, 3003-F	42.40	47.20
5050-F	43.50	48.30
3004-F	44.50	50.20
5052-F	45.10	50.90
6061-T6	45.60	51.70
2024-T4	49.30	56.10
7075-T6*	57.60	64.70

*24-48 in. width or diam., 72-180 in. lengths

Screw Machine Stock: 30,000 lb base.

Diam. (in.) or across flats*	Round 2011-T3	Round 2017-T4	Hexagonal 2011-T3	Hexagonal 2017-T4
0.125	76.90	73.90	.....	.....
0.250	62.00	60.20	89.10	76.60
0.375	61.20	60.00	73.50	68.50
0.500	61.20	60.00	73.50	68.50
0.625	61.20	60.00	69.80	64.20
0.750	59.70	58.40	63.60	60.40
0.875	59.70	58.40	63.60	60.40
1.000	59.70	58.40	63.60	60.40
1.125	57.30	56.10	61.50	58.30
1.250	57.30	56.10	61.50	58.30
1.350	57.30	56.10	61.50	58.30
1.500	57.30	56.10	61.50	58.30
1.625	55.00	53.60	.....	56.20
1.750	55.00	53.60	60.30	56.20
1.875	55.00	53.60	.....	56.20
2.000	55.00	53.60	60.30	56.20
2.125	53.50	52.10	.....	.....
2.250	53.50	52.10	.....	56.20
2.375	53.50	52.10	.....	.....
2.500	53.50	52.10	.....	56.20
2.625	.....	50.40	.....	.....
2.750	51.90	50.40	.....	56.20
2.875	.....	50.40	.....	.....
3.000	51.90	50.40	.....	56.20
3.125	.....	50.40	.....	.....
3.250	.....	50.40	.....	.....
3.375	.....	50.40	.....	.....

*Selected sizes.

Forging Stock: Round, Class 1, random lengths, diam. 0.375-8 in., "F" temper; 2014, 42.20-55.00; 6061, 41.60-55.00; 7075, 61.60-75.00; 7070, 66.60-80.00.

Pipe: ASA schedule 40, alloy 6063-T6 standard length, plain ends, 90,000 lb base, dollars per 100 ft. Nominal pipe sizes: ⅜ in., 18.85; 1 in., 29.75; 1¼ in., 40.30; 1½ in., 48.15; 2 in., 58.30; 4 in., 160.20; 6 in., 287.55; 8 in., 432.70.

Extruded Solid Shapes:

Factor	Alloy 6063-T5	Alloy 6062-T6
9-11	42.70-44.20	51.30-55.50
12-14	42.70-44.20	52.00-56.50
15-17	42.70-44.20	53.20-58.20
18-20	43.20-44.70	55.20-60.80

MAGNESIUM

Sheet and Plate: AZ31B standard grade, 0.32 in., 103.10; .081 in., 77.90; .125 in., 70.40; .188 in., 69.00; .250-2.0 in., 67.90. AZ31B spec. grades, .032 in., 171.30; .081 in., 108.70; .125 in., 98.10; .188 in., 95.70; .250-2.00 in., 93.30. Tread plate, 60-192 in. lengths, 24-72 in. widths; .125 in., 74.90; .188 in., 71.70-72.10; .25-.75 in., 70.60-71.60. Tooling plate, .25-.30 in., 7300.

Extruded Solid Shapes:

Factor	Com. Grade (AZ31C)	Spec. Grade (AZ31B)
6-8	69.60-72.40	84.60-87.40
12-14	70.70-73.00	85.70-88.00
24-26	75.60-76.30	90.00-91.30
36-38	89.20-90.30	104.20-105.30

NONFERROUS SCRAP

DEALER'S BUYING PRICES

(Cents per pound, New York, in ton lots.)

Copper and Brass: No. 1 heavy copper and wire, 21.00-21.50; No. 2 heavy copper and wire, 19.00-19.50; light copper, 17.25-17.75; No. 1 composition red brass, 16.00-16.50; No. 1 com-

BRASS MILL PRICES

	MILL PRODUCTS a				SCRAP ALLOWANCES e (Based on copper at 29.00c)		
	Sheet, Strip, Plate	Rod	Wire	Seamless Tubes	Clean Heavy	Rod Ends	Clean Turnings
Copper	53.13b	50.36c	.....	53.39	25.000	25.000	24.250
Yellow Brass	46.57	31.22d	47.11	49.98	17.000	16.750	15.250
Low Brass, 80%	49.23	49.17	48.87	52.54	21.250	21.000	20.500
Red Brass, 85%	50.17	50.11	50.71	53.48	22.125	21.875	21.375
Com. Bronze, 90%	51.65	51.59	52.19	54.71	22.875	22.625	22.125
Manganese Bronze	54.98	48.58	59.08	.....	17.750	17.500	16.875
Muntz Metal	49.35	44.66	.....	.....	17.875	17.625	17.125
Naval Brass	51.24	45.05	57.80	54.65	17.625	17.375	16.875
Silicon Bronze	58.27	57.46	57.81	75.93	24.625	24.625	23.625
Nickel Silver, 10%	62.20	66.60	64.03	.....	23.875	23.625	11.937
Phos. Bronze	72.59	73.09	72.59	74.27	25.875	25.625	24.625

a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. Prices in cents per lb for less than 20,000 lb, f.o.b. shipping point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb.

position turnings, 15.00-15.50; new brass clippings, 14.25-14.75; light brass, 10.50-11.00; heavy yellow brass, 11.50-12.00; new brass rod ends, 12.00-12.50; auto radiators, unsweated, 12.50-13.00; cocks and faucets, 13-00-13.50; brass pipe, 13.00-13.50.

Lead: Heavy, 8.25-8.75; battery plates, 3.00-3.25; linotype and stereotype, 10.50-11.00; electrotype, 9.00-9.50; mixed babbitt, 9.50-10.00.

Monel: Clippings, 30.00-31.00; old sheets, 27.00-28.00; turnings, 22.00-23.00; rods, 30.00-31.00.

Nickel: Sheets and clips, 52.00-55.00; rolled anodes, 52.00-55.00; turnings, 37.00-40.00; rod ends, 52.00-55.00.

Zinc: Old zinc, 4.00-4.25; new diecast scrap, 3.75-4.00; old diecast scrap, 2.50-2.75.

Aluminum: Old castings and sheets, 9.75-10.25; clean borings and turnings, 6.25-6.75; segregated low copper clips, 13.00-13.50; segregated high copper clips, 13.00-13.50; mixed low copper clips, 12.00-12.50; mixed high copper clips, 10.75-11.25.

(Cents per pound, Chicago)

Aluminum: Old castings and sheets, 11.00-11.50; clean borings and turnings, 9.00-9.50; segregated low copper clips, 16.00-16.50; segregated high copper clips, 15.00-15.50; mixed low copper clips, 15.00-15.50; mixed high copper clips, 14.50-15.00.

(Cents per pound, Cleveland)

Aluminum: Old castings and sheets, 10.00-10.50; clean borings and turnings, 9.00-9.50; segregated low copper clips, 14.00-14.50; segregated high copper clips, 12.50-13.00; mixed low copper clips, 13.00-13.50; mixed high copper clips, 12.00-12.50.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 55.00; light scrap, 50.00; turnings and borings, 35.00.

Copper and Brass: No. 1 heavy copper and wire, 24.25; No. 2 heavy copper and wire, 22.75; light copper, 20.50; refinery brass (60% copper) per dry copper content, 22.25.

INGOTMAKERS' BUYING PRICES

Copper and Brass: No. 1 heavy copper and wire, 24.25; No. 2 heavy copper and wire, 22.75; light copper, 20.50; No. 1 composition borings, 18.50; No. 1 composition solids, 19.00; heavy yellow brass solids, 13.00; yellow brass turnings, 12.00; radiators, 15.25.

PLATING MATERIALS

(F.o.b. shipping point, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes, $1.45.

Copper: Flat-rolled, 46.79; oval, 45.00; 5000-10,000 lb; electrodeposited, 38.50, 2000-5000 lb lots; cast, 41.00, 5000-10,000 lb quantities.

Nickel: Depolarized, less than 100 lb, 114.25; 100-499 lb, 112.00; 500-4999 lb, 107.50; 5000-29,999 lb, 105.25; 30,000 lb, 103.00. Carbonized, deduct 3 cents a lb.

Tin: Bar or slab, less than 200 lb, 117.50; 200-499 lb, 116.00; 500-999 lb, 115.50; 1000 lb or more, 115.00.

Zinc: Balls, 18.00; flat tops, 18.00; flats, 20.75; ovals, 20.00, ton lots.

CHEMICALS

Cadmium Oxide: $1.45 per lb in 100-lb drums.

Chromic Acid (flake): 100-2000 lb, 31.00; 2000-10,000 lb, 30.50; 10,000-20,000 lb, 30.00; 20,000 lb or more, 29.50.

Copper Cyanide: 100-200 lb, 65.90; 300-900 lb, 63.00; 1000-19,900 lb, 61.90.

Copper Sulphate: 100-1900 lb, 14.65; 2000-5000 lb, 12.65; 6000-11,900 lb, 12.40; 12,000-22,900 lb, 12.15; 23,000 lb or more, 11.65.

Nickel Chloride: 100 lb, 45.00; 200 lb, 43.00; 300 lb, 42.00; 400-4900 lb, 40.00; 5000-9900 lb, 38.00; 10,000 lb or more, 37.00.

Nickel Sulphate: 5000-22,999 lb, 29.00; 23,000-39,990 lb, 28.50; 40,000 lb or more, 28.00.

Sodium Cyanide (Cyanobrik): 200 lb, 20.80; 400-800 lb, 19.80; 1000-19,800 lb, 18.80; 20,000 lb or more, 17.80.

Sodium Stannate: Less than 100 lb, 78.00; 100-600 lb, 68.80; 700-1900 lb, 66.00; 2000-9900 lb, 64.10; 10,000 lb or more, 62.80.

Stannous Chloride (anhydrous): 25 lb, 153.20; 100 lb, 148.30; 400 lb, 145.90; 800-19,900 lb, 105.00; 20,000 lb or more, 98.90.

Stannous Sulphate: Less than 50 lb, 138.40; 50 lb, 108.40; 100-1900 lb, 106.40; 2000 lb or more, 104.40.

Zinc Cyanide: 100-200 lb, 59.00; 300-900 lb, 57.00.

(Concluded from Page 85)

current prices. But some business is being done, and market activity should increase after the turn of the year.

Houston—A Texas mill, entering the market for steel scrap for the first time since February, bought small tonnages of No. 2 heavy melting and No. 2 bundles. Brokers paid $32 for the No. 2 heavy melting and $23 for the No. 2 bundles.

An inland Mexican mill also bought a limited tonnage of No. 2 heavy melting, paying $32, delivered the border.

Birmingham—The market is at a virtual standstill. Brokers are receiving no offers from consumers, and it's expected that lower prices will develop when buying is resumed after the holidays. Export market activity is absent.

Seattle — Dealers look for no marked improvement in demand until March or April. The mills hold substantial inventories, and their current buying is so small as to provide little test of prices. Some dealers are accumulating stocks.

San Francisco — The market is easier. Prices on top steelmaking grades nudged $36 a week ago, but tonnage last week moved at $32-$34 a ton. Other grades also have been marked down.

Los Angeles—Scrap price trend is uncertain, with some grades moving up and others down. No. 1 bundles are quoted up $4 a ton, No. 2 bundles $3, and machine shop turnings $3. No. 1 cupola scrap is up $1 a ton to $47. At the same time, No. 1 heavy melting is reported off $4 a ton to $33.

Foundry activity in the fourth quarter bettered that in the third quarter. Most foundries operated at about 60 per cent of capacity.

Scrapmen To Study Costs

Faced with heavy overhead, high inventories, and peak level wages, scrapmen are paying more attention to basic cost factors.

The Institute of Scrap Iron & Steel Inc. recently pointed out that in the old days a dealer might have 65 per cent of his capital in cash, and 35 per cent in equipment. Today, processors find themselves with 65 per cent tied up in equipment, and 35 per cent in cash.

Costs will be among the subjects

STRUCTURAL STEEL DESIGNERS & ESTIMATORS

Wanted immediately. Must be experienced and have good personality. Opportunity to be branch office manager. Prefer man in forties.

This leading Southern company has plants located in six cities.

Please send complete resume to Box 714, STEEL, Penton Bldg., Cleveland 13, Ohio. Replies will be held in confidence. Interviews arranged with qualified applicants.

PLANTS WANTED FOR EXPORT

- Plant for manufacture of 55 gal. steel drums.
- Plant for manufacture of 5 gal. paint cans.

Require all machines, welders, tools, dies, jigs, and fixtures. OLDER EQUIPMENT ACCEPTABLE if offered as complete unit.

Address Box 718, STEEL
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METALLIZING WIRES
all ferrous and non-ferrous metals
Rigidly Specified for
Metal Spraying
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MOTORS • GENERATORS TRANSFORMERS
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WORLD'S LARGEST INVENTORY
CALL COLLECT GL 3-6783
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NUT & BOLT PLANT WANTED

Complete manufacturing plant with capacity of ¼" to 1½" thickness needed at once for foreign country. Age of machinery not important.

Box 722, STEEL
Penton Bldg. Cleveland 13, Ohio

CLASSIFIED

Positions Wanted

AVAILABLE:—M.E. and Master Mechanic. Experienced in all phases of the Forging Industry, Die Design, Machining, Maintenance, Heat Treating of Tools, Dies and Forgings, Processing of Tool and Die Welding. Reply Box 716, STEEL, Penton Bldg., Cleveland 13, Ohio.

WE CAN HELP YOU TO CONTACT high calibre men to fill specific jobs you have in mind—
Readers of STEEL include men of wide training and experience in the various branches of the metalworking industry.
When you have an opportunity to offer, use the Help Wanted columns of STEEL.

discussed at the institute's forthcoming convention in New York Jan. 11-14. Subjects at the session on costs will include: Cost of transporting material into yards (by truck, trailer, or other means); cost of preparation (baling, shearing, torching); costs of storing and loading; overhead costs; and considerations in computing bids.

Steel Bars . . .

Bar Prices, Page 80

Demand for hot carbon steel bars continues diversified, with volume expected to improve as the new year gets underway. Warehouses, cold drawers, and fastener makers are thought likely to specify more freely.

Better metalworking activity generally is expected to generate improved buying in a variety of lines. This is likely to apply to hot and cold drawn bars and to alloy bars. Hot carbon bar deliveries range two to three weeks.

Producers of hot carbon bars still have substantial capacity open for January. A tighter situation though is likely after the turn of the year, especially if automotive requirements continue to improve.

To some extent, the sluggishness in bars is seasonal. Production of farm machinery is off at this time of the year. The demand also is hurt by the strike at International Harvester plants.

Sellers say that use of bars isn't off as much as mill activity indicates. They point out that production capacity is considerably greater today than it was a year ago, and the going tonnage is more widely distributed.

Closer tolerances for cold-finished round, square, and hexagon carbon steel bars (they reduce the allowable variance up to one-half of industry standards), are announced by Bliss & Laughlin Inc., Harvey, Ill. They have been standard at Bliss & Laughlin plants for the last six months.

The new tolerances are made possible by completion of a research and development program, which includes improved die design, extensive use of carbide dies, and more precise manufacturing practices.

Additional extras do not apply to the new standards which formerly required special handling.

A similar announcement was made by LaSalle Steel Co., Hammond, Ind., effective Dec. 19. Over three months ago LaSalle announced closer tolerances for stressproof round steel bars.

Wire . . .

Wire Prices, Pages 82 & 83

"We'll ship the same tonnage this month as we did in November, possibly less," reports a Pittsburgh area wiremaker. "October was our best month this year for bookings. The order influx started to taper off in November, and there's been no acceleration since. Automotive industry strikes have made inventories last longer than we had expected.

"January should be as good a month for us as December. If October hadn't been so expectional, we'd expect our first quarter sales to be better than those of the last three months."

Wiremakers are hoping for some relief from the competition from imported material. Imports have been particularly heavy at Gulf ports, but other areas also have been hit by the flood of foreign material.

Distributors . . .

Prices, Page 84

The mills are getting little pressure for deliveries of replacement tonnage from the distributors. But the steel service centers are moving more tonnage than they were a month ago, though the improvement in their order volume has not been as marked as that at the mill level.

Holiday suspensions cut sales last week, but business is expected to move ahead right after the turn of the year. Galvanized and cold-rolled sheets are more active than other products.

Imports are playing hob with the distributors' market at various points. In the Southwest, entry of a shipment of Japanese plates has stalled normal demand and unsettled prices.

Pig Iron . . .

Pig Iron Prices, Page 84

Sellers of merchant pig iron look for a moderate pickup in demand during the first quarter. Some producers think volume will surpass that in the quarter now closing, which, for them, was the best three-month period of 1958.

Optimism is based principally on prospects for a livelier metalworking market generally, and on the knowledge that consumers' inventories of iron are light.

The Wickwire Spencer Div., Colorado Fuel & Iron Corp., has shut down a 450-ton blast furnace for major repairs. This Buffalo district stack will be down about three months. It leaves ten stacks active in the Buffalo area out of a total of 16.

Structural Shapes . . .

Structural Shape Prices, Page 80

Structural steel fabricators will enter the new year with moderately good backlogs and prospects for increasing business. No substantial upturn in demand is expected until February or early March, though, and competition will continue keen beyond the first quarter.

Stiff competition is reflected in prices and in the large number of bidders on various projects. Shops are going for work they normally would not consider.

Fabricators are buying plain material to cover contracts only, but a pickup in forward ordering is expected in late first quarter. Inventories are down.

The bulk of estimating in New England is for bridge tonnage. Commercial building is slow with the Prudential Life Insurance Co center outstanding.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

5850 tons, exposition center building, 23rd Street and Lake Michigan, Chicago, to the American Bridge Div., U. S. Steel Corp., Pittsburgh.

2200 tons, state highway structures, Sprain Brook Parkway, Westchester County, New York, to City Iron Works, Wethersfield, Conn.; Poferier & McLane Corp., New York, general contractor.

1560 tons, seven state highway structures, Medford, Mass., to West End Iron Works, Cambridge, Mass.; Berke-Moore Co. Inc., Boston, general contractor.

STRUCTURAL STEEL PENDING

1947 tons, state bridgework, Cumberland County, Pennsylvania, Hemp Bros. Inc., Camphill, Pa., low on general contract.

1565 tons, state bridgework, Armstrong County, Pennsylvania, Frank Mashuga Co., Evans City, Pa., low on general contract.

1450 tons, bolt roof-tunnel supports, Wachusetts-Marlboro, Mass., tunnel; bids Jan. 15, Metropolitan District Commission, Boston.

620 tons, public school No. 5, Bronx, New York, Colmar Construction Co., Brooklyn, N. Y., low on the general contract.

370 tons, also 135 tons of reinforcing and piling, Hood Canal bridge approaches, Washington State; General Construction Co., Seattle, low bidder at $508,855.

TOO BUSY TO LIVE ?

Are you really too busy to have a health checkup once a year? Or do you put it off because you're afraid your doctor might find something wrong?

If it's cancer you're worried about, remember that doctors are curing many more cancers than they could ten years ago. 800,000 Americans are alive today, cured of cancer... many of them because they had made a habit of having annual checkups no matter how **well** they felt...**all** of them because they went to their doctors **in time!** Make annual checkups a habit ...**for life!**

AMERICAN CANCER SOCIETY

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TO FIND THE MAN YOU NEED...

Place an advertisement in the "Help Wanted" columns of STEEL's classified pages. Your advertisement will reach the qualified men you need, because STEEL is addressed to highly-trained men in all phases of metalworking

STEEL
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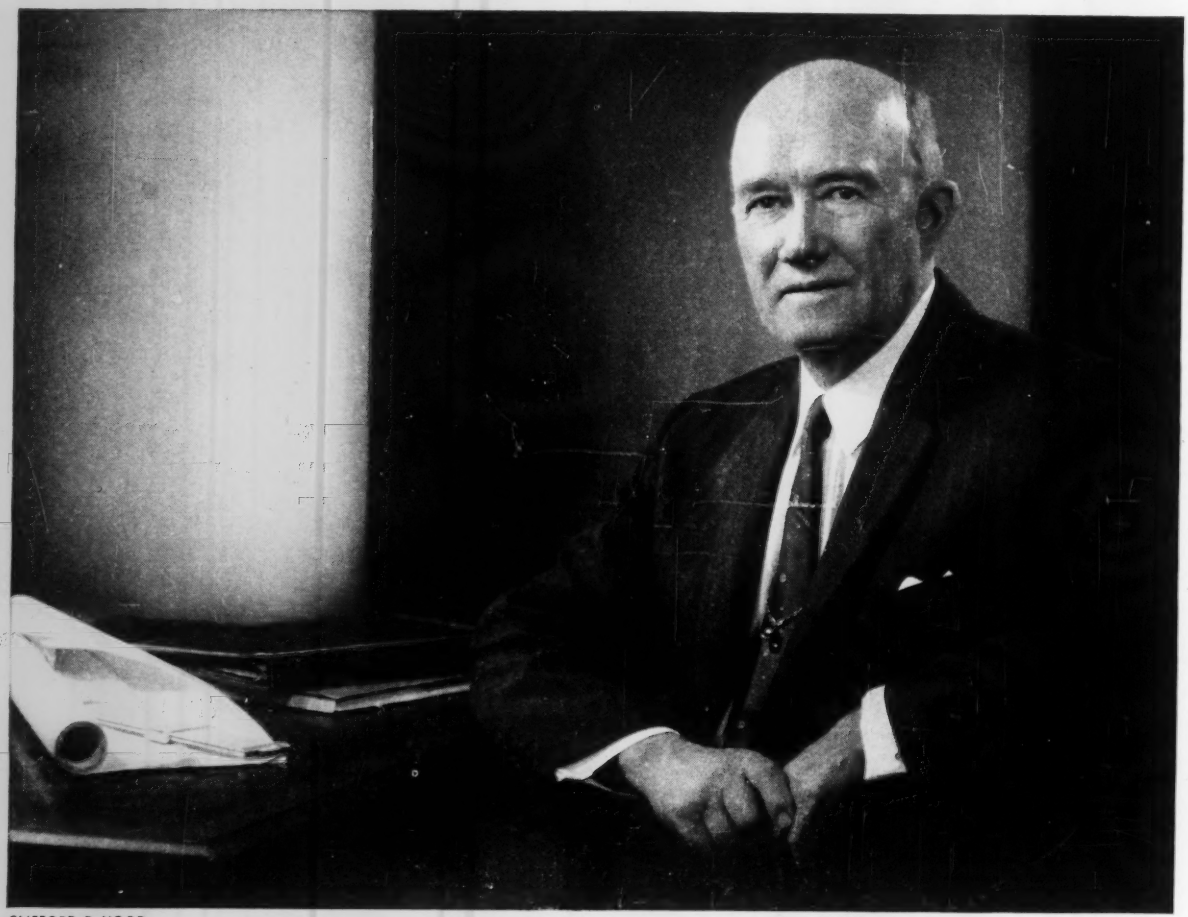


CLIFFORD F. HOOD

Portrait by Fabian Bachrach

"U. S. Steel employees invest more than $2,400,000 a month in U. S. Savings Bonds"

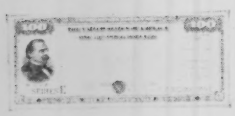
"Those enrolled in the Payroll Savings Plan for U.S. Savings Bonds alone save the equivalent of one and one half $25 bonds a month.

"For those investing in U.S. Savings Bonds under the Savings Fund Plan, each is averaging more than one $25 bond per month.

"The response of our employees to the Payroll Savings Plan for Savings Bonds is evidence of their faith in the nation. We are proud of their record in saving systematically in E Bonds, thus participating in a program of planned thrift while helping to build America's power to keep the peace."

CLIFFORD F. HOOD, *President and Chairman, Executive Committee, United States Steel Corp.*

Today there are more Payroll savers than ever before in peacetime. If employee participation in your Payroll Savings Plan is less than 50% . . . or if your employees now do not have the opportunity to build for their future through the systematic purchase of U.S. Savings Bonds, give your State Director an opportunity to help. Look him up in your phone book. Or write: Savings Bonds Division, U. S. Treasury Dept., Washington, D. C.



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PUBLIC SERVICE ADVERTISING COUNCIL

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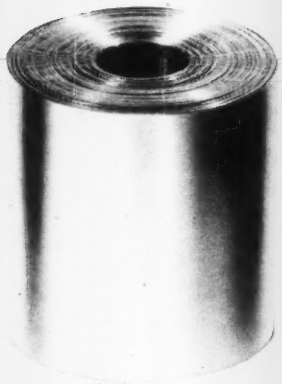

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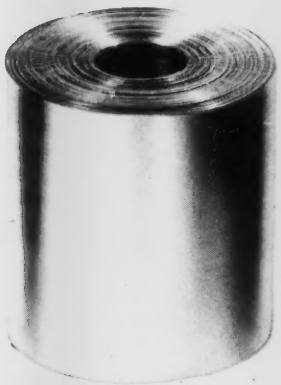
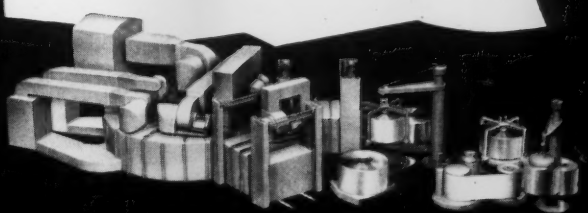


...recoil for processing

25th Lee Wilson ENGINEERING COMPANY INC. CLEVELAND

Lee Wilson's revolutionary new coil opening system exposes as much as 400 times more coil area to furnace heat. This obviously means faster heating with substantially better control... a better annealed product, and production rates that reduce process inventory at annealing stations by 80 percent. Be sure you have all the facts on the amazing new Opened Coil Annealer before you purchase additional annealing furnace equipment.



Lee Wilson ENGINEERING COMPANY, INC.

2000S. LAKE ROAD • CLEVELAND 16, OHIO

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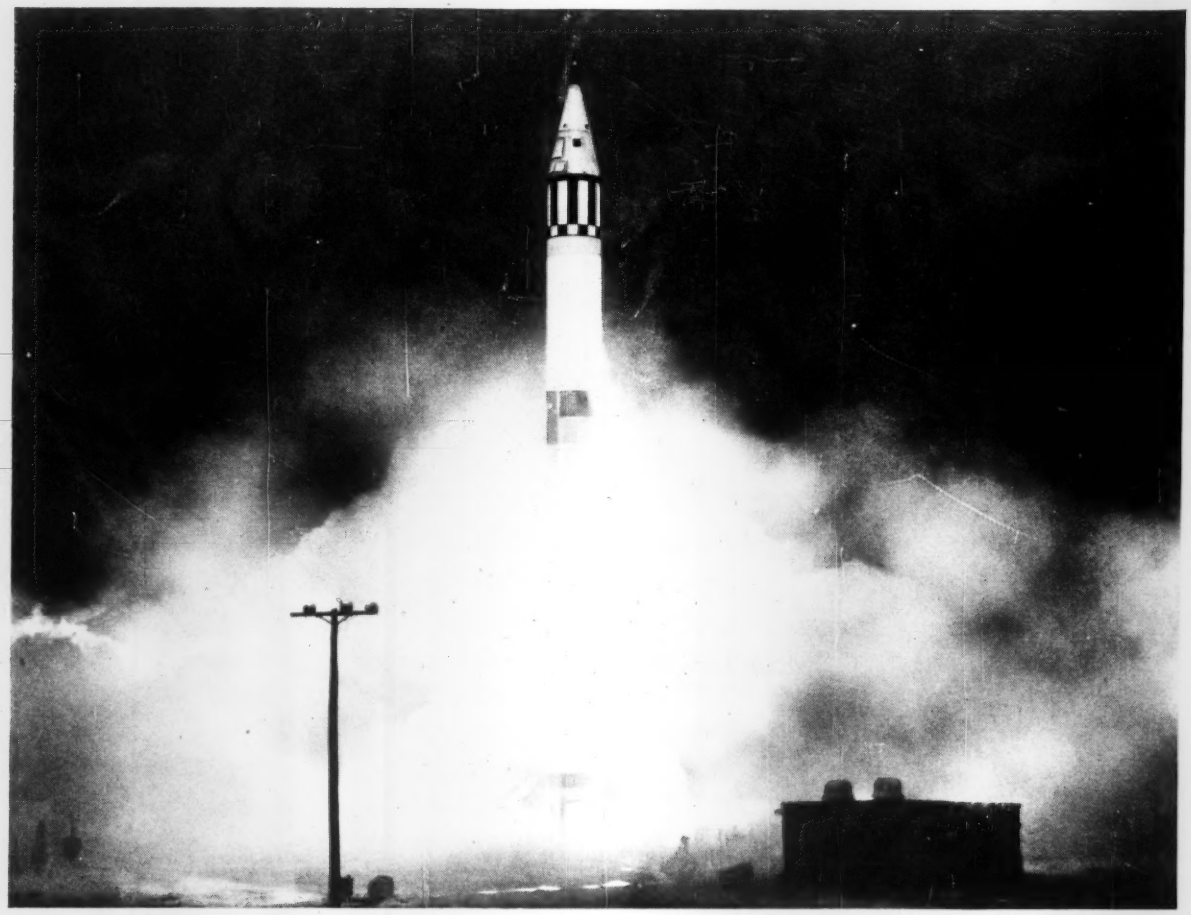
MAKE THE BEST METALS BETTER

* ORIGINATORS AND LEADING PRODUCERS OF OPENED COIL AND SINGLE STACK FURNACES



U. S. Army photo

Why is a missile like a wheelbarrow?

IT might seem strange that one of the simplest means of transportation and one still in the future should have anything in common. But they do. Both have rotating parts. And both have Timken® tapered roller bearings.

Wherever any parts rotate in your equipment, on road machinery, cranes and machine tools, you'll find Timken tapered roller bearings. They practically eliminate friction—easing the path of motion, whether it be moving a third of a yard of mortar or a space satellite into orbit.

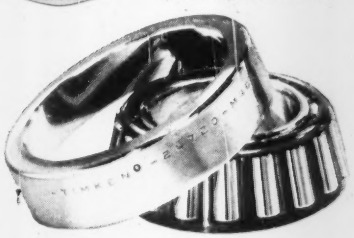
Timken bearings are made to various degrees of precision—more than ample precision for use in ordinary machines, jewel accurate for specialized, fine machinery. Their tapered design means they take loads from all directions—eliminate the need for bulky thrust devices. And full-line contact between rollers and races give Timken bearings extra load-carrying capacity.

Because Timken bearings are precision made (we even make our own steel to make sure we start with the best) they give long life with minimum maintenance. They keep production up and costs down.

Make sure you get all these advantages in the machines you buy or build. Specify Timken tapered roller bearings. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ont. Cable: "TIMROSCO".

TIMKEN BEARING EQUIPPED

This symbol on a product means its bearings are the best.



TIMKEN

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